California and Western Medicine

Official Publication of the
CALIFORNIA MEDICAL ASSOCIATION

Accredited Representative of the
NEVADA STATE MEDICAL ASSOCIATION

Accredited Representative of the
UTAH STATE MEDICAL ASSOCIATION

PRINTED AND EDITED

for the

California Medical Association

Under the direction of the House of Delegates and Council

GEORGE H. KRESS, M. D., *Editor*

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VOLUME XXXV

JULY TO DECEMBER, 1931

CALIFORNIA MEDICAL ASSOCIATION, FOUR FIFTY SUTTER
SAN FRANCISCO

JUL 15 1931

ANNUAL SESSION
California Medical Association, Hotel Huntington, Pasadena, 1932

CALIFORNIA AND WESTERN MEDICINE

Medical Lib.

Owned and Published Monthly by the California Medical Association
FOUR FIFTY SUTTER, ROOM 2004, SAN FRANCISCO
ACCREDITED REPRESENTATIVE OF THE CALIFORNIA, NEVADA AND UTAH MEDICAL ASSOCIATIONS

VOLUME XXXV
NUMBER 1

JULY · 1931

50 CENTS A COPY
$5.00 A YEAR

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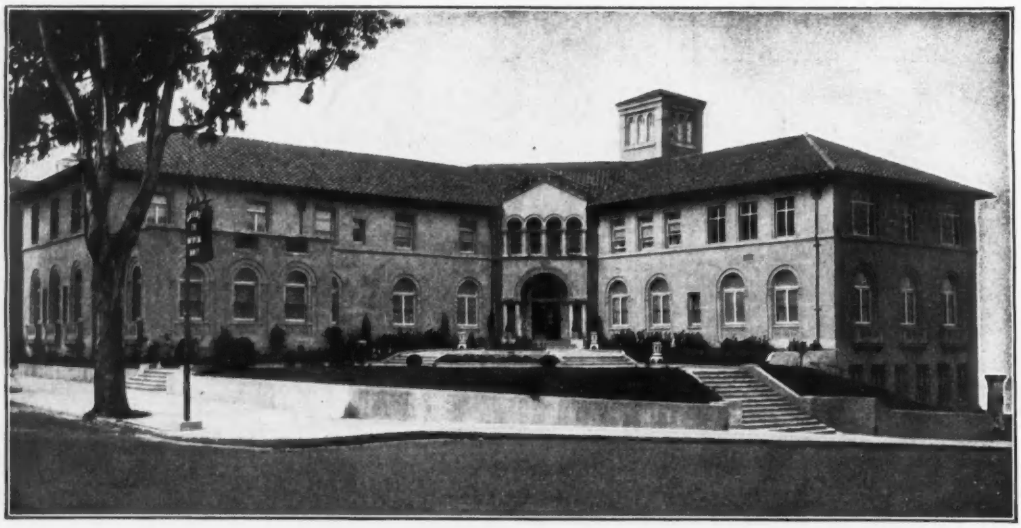
"Entered as second-class matter at the post office at San Francisco, California, under the Act of March 3, 1879." Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 10, 1918.



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VOLUME XXXV JULY, 1931 No. 1

DISEASES OF THE BILIARY TRACT—CLINICAL AND SURGICAL ASPECTS*

REPORT OF CASE

By CLAUDE F. DIXON, M. D.
Rochester, Minnesota

IN Hippocrates' writings no mention is made of gall-stones. Galen once observed a large stone which had been passed by rectum. He apparently did not suspect that it came from the biliary tract.

COMMENTS ON LITERATURE

Gentile de Foligno, in 1348, was the first to observe gall-stones. Fernel, in 1554, suggested that gall-stones were the product of thickened bile and that their formation was more likely if one of the biliary ducts became occluded. Johann Fabricus, in 1618, removed a stone from the gall-bladder of a human being. The operation probably was performed on the cadaver.

The seventeenth century marks the beginning of experimental surgery on the gall-bladder. Zambeccari was the first to remove the gall-bladder; he carried out the experiment on a dog. The animal recovered. Michael Entmuller, in 1667, concluded, from experiments by others, that removal of the gall-bladder had no effect on the biliary passages. It was Jean Louis Petit who, in 1743, first operated for the removal of gall-stones. He was of the opinion that before the gall-bladder could be operated on adhesions must first fix the organ to the abdominal wall. Then, by puncturing the gall-bladder through these adhesions, he thought stones could be removed by long forceps. Surgeons of this period were so convinced of the importance of adhesions between the gall-bladder and abdominal wall that substances such as onions and horseradish were applied to the abdomen to bring about this fixation. Later surgeons opened the abdomen and spread these various substances over the parietal peritoneum in order to wall off the gall-bladder. Later others such as Thudicum, in 1859, thought drainage of the gall-bladder should be done in stages; the gall-bladder should first be sutured to the abdominal wall, and it should be opened later.

Bobbs, in 1867, an American surgeon, made the first cholecystostomy. He was of the opinion that he was operating on an ovarian cyst. Marion Sims, in 1878, drained the gall-bladder of a patient who was suffering from dropsy. Death occurred nine days later. In the same year Kocher, Tait, and Keen did this operation with gratifying results. Langenbuch is credited with having done the first cholecystectomy June 15, 1882. The patient's convalescence was without incident. This surgical feat was followed in France by Courvoisier and in America by Ohage in 1887.

Lawson Tait of England was much against removal of the gall-bladder, and apparently for this reason cholecystectomy was not done in that country for several years. Operations on the biliary ducts were first carried out by von Winiwarter, Seyffert, Kümmel, Thornton, Haasler, Kocher, McBurney, and Reidel.

PATHOLOGY

The increase in operations on the gall-bladder has been responsible, naturally, for a large number of injuries to the common bile duct. Most of these accidents have occurred because of technical difficulties encountered at the time of operation. Reconstruction of the common duct has been necessary in many instances in which it has been injured. Pioneers in this type of surgery are Jacobson, W. J. Mayo, Moynihan, and others.

It was once common opinion that if stones could be successfully removed from the gall-bladder, recovery from the symptoms of disease of the gall-bladder inevitably followed. Because of recurrence of symptoms in many of these cases, with or without the formation of additional stones, the gall-bladder itself has received more consideration and the stones less consideration as the probable etiologic factor in the production of that group of symptoms which is believed usually to characterize cholecystitis or cholecystic disease.

Changes in the liver and biliary ducts, associated with certain types of chronic disease of the gall-bladder, have for some time attracted the attention of the surgeon and the pathologist. Some of these changes (hepatitis, cirrhosis) have been so marked as to suggest impairment of certain functions thought normally to be carried on by the liver. These pathologic modifications, then, associated with biliary disease, have stimulated a vast amount of experimental physiologic investigation, not only with regard to the normal function of the liver, but also with regard to the results obtained following experimentally produced lesions that are similar to those frequently seen in certain advanced cases of cholecystitis.

Infection seems to have been considered the greatest single cause of disease of the biliary tracts. Yet, in some instances, it seems fundamentally sound to attribute the etiology to some

* From the division of surgery of the Mayo Clinic, Rochester, Minnesota.

* Read before the Nevada State Medical Association at Reno, September 26-27, 1930.

metabolic disturbance. When infection was suggested as the cause of disease of the gall-bladder some discouraging attempts were made to isolate the offending organism. These studies were carried out on cultures made from the bile of grossly diseased gall-bladders. Rosenow, Wilkie, and others, made bacteriologic studies on the wall of the gall-bladder instead of on the bile, and obtained positive cultures in a high percentage of apparently diseased gall-bladders. Wilkie and his coworkers made cultures of gall-bladders removed from patients with clinical histories of cholecystic disease of long standing. Results were positive in 82 per cent of cases. The streptococcus was the predominating organism. In a later, similar group, Wilkie's results were not so encouraging. Concerning those who have been unable to duplicate, to any appreciable extent, Rosenow's and Wilkie's studies, the latter has suggested that the discrepancy was probably due to technical error. He has said that if the mucous membrane is included, when the wall of the gall-bladder is cultured, the small amount of bile adhering to the mucous membrane might be the cause of the negative results. The organisms which have been demonstrated in diseased gall-bladders have been found in the submucous layer and not in the bile or in the mucosa. With regard to infection as the sole cause of cholecystitis, then it may be said that bacteria, or evidence of the presence of bacteria, have not been demonstrated in all cases studied.

TYPES OF CHOLECYSTIC DISEASE

The fact that identical histories characteristic of disease of the gall-bladder can be obtained from patients whose gall-bladders on removal present entirely different pictures, has led to the attempt to classify disease of the gall-bladder. This attempt has not been successful in all respects. For example, the impression may have been gained, from one patient's history, that the gall-bladder contains stones; at operation stones may not be found, and vice versa. Therefore, from clinical or roentgenologic studies, it is not possible to determine definitely in all cases what type of gall-bladder will be found at operation, although in all cases the characteristic subjective and objective features may be the same.

Aschoff many years ago reported peculiar, yellowish, pin-point stippling observed in the mucosa of the gall-bladder in certain cases of clinical cholecystic disease. MacCarty, in 1910, again called attention to such gall-bladders, which W. J. Mayo and Moynihan later described, and which is known now as "strawberry gall-bladder."

Boyd found that this strawberry appearance of the mucous membrane in certain gall-bladders that previously had been described was due to a lipoidal substance, an ester of cholesterol, which filled the cells of the submucosa, protruded into the cells of the mucous membrane of the villi and caused the characteristic strawberry appearance. Mentzer gave the name "cholesterosis" to this condition. One of the reasons suggested for the occurrence of this interesting phenomenon is that the paths of absorption in the submucous layers of the gall-bladder may be blocked, thereby allowing a collection of cholesterol to accumulate in the mucous membrane and that occasionally these fine granules of cholesterol may be shed, forming the nuclei of stones. Occasionally a single cholesterol stone may be found in an otherwise normally functioning gall-bladder, and symptoms of its presence may not occur unless it obstructs the cystic duct. This type of stone is thought to be of metabolic origin, and probably is produced at some such time as the concentration of blood cholesterol is considerably higher than normal. Of one thousand cases of this type, studied by Mentzer and Judd, 60 to 70 per cent of the women dated their first attack at a time during their first pregnancy.

Dewey found, in hypercholesterolized animals, that the lymphatic structures of the gall-bladder were filled with cholesterol. Gosset, Bertrand, and Loewy confirmed this observation. They were of the opinion that the presence of cholesterol in the mucosa, producing the so-called strawberry gall-bladder, was an aseptic process, occurring during a time of hypercholesterolemia, and that infection came secondarily, setting free the cholesterol and causing formation of stones. In half of the one thousand cases of cholesterosis studied by Mentzer and Judd, the gall-bladders contained stones. These authors also observed that in the cases in which stones were present the history was of much longer duration than in those in which stones were absent. It has been suggested that formation of stone in the gall-bladder, which is the site of cholesterosis, may be brought about by the shedding of these bits of cholesterol, forming the nucleus of the stone. It has been observed that if a pure cholesterol stone is dissolved, the nucleus is of an albuminous nature, suggesting the characteristics of a polyp.

Removal of a strawberry gall-bladder, even in the absence of stones, almost invariably gives complete relief, provided the symptoms before operation were those characteristic of cholecystic disease. Not only may negative cultures of the bile and of the wall of the gall-bladder be obtained in this type of disturbance of the gall-bladder, but frequently there is no evidence of infection, such as infiltration of the lymphatic apparatus. In a true sense it would seem that this type of cholecystic disease is of metabolic origin.

In those cases of cholesterosis in which positive cultures of the wall of the gall-bladder, and microscopic evidence of infection can be demonstrated, infection is evidently a secondary factor. Roentgenologic examination of a gall-bladder in which cholesterosis is present is usually negative, regardless of the symptoms, unless sufficient scar tissue is present to prevent absorption of the dye; in that case a positive roentgenologic examination or the presence of a nonfunctioning gall-bladder is reported.

Another type of disturbance of the gall-bladder is clinical cholecystic disease, a term suggested by Judd and McIndoe. Comprising this group are the patients whose histories are typical of disease of the gall-bladder. However, the removed gall-bladder does not contain stones and does not

show evidence, grossly or microscopically, of either an infectious or a metabolic process. The most interesting feature of these cases is that in practically all of them in which pain was the predominating symptom, relief has been obtained by cholecystectomy. Neurosis must be carefully distinguished from this condition. The reason for the symptoms in clinical cholecystic disease is not known. That the sphincter of Oddi loses its power of contraction to a considerable extent following removal of the gall-bladder, allowing a continuous flow of bile into the duodenum, has been demonstrated. It is possible that this phenomenon explains why relief by cholecystectomy is brought about in this type of disturbance of the gall-bladder.

The diffusely infected gall-bladder, with thick, leathery, grayish-white walls, containing many stones, usually is the picture one has in mind when considering cholecystic disease. This process may begin as an inflammatory condition in the wall of the viscus, in the manner in which acute enteritis occurs in typhoid fever. In the acute stage, symptoms of cholecystitis may be present, the process may become chronic and stones may be formed. Another most feasible explanation for this type of cholecystitis is secondary infection superimposed on either of the other two groups just mentioned. It is from this diffusely diseased type of gall-bladder that it is possible to get positive bacterial cultures. The types of stones in this group may be cholesterol and calcium-bilirubin stone, particularly if infection is superimposed on the cholesterosis type of gall-bladder.

In the beginning I mentioned the importance of considering the liver and biliary ducts in connection with cholecystic disease. In removing the gall-bladder a careful examination of the common bile duct is all-important, particularly if the duct is enlarged. The experience of having a patient return several months after cholecystectomy, with the same complaint, and perhaps in addition with jaundice, at once arouses the suspicion that a stone in the common bile duct was overlooked at the time of the first operation. Further surgical interference is, of course, obviously indicated in this type of case. Judd has reported fifty-two cases in this group in which secondary operation revealed a large common bile duct but did not reveal stones. Prolonged external, intermittent drainage, by means of a T tube, effected relief in practically all of the cases; the condition evidently was one of diffuse cholangeitis.

THE HEPATITIS OF CHRONIC GALL-BLADDER DISEASE

Now that I have dealt briefly with certain types of cholecystic disease, with particular reference to the changes found in the gall-bladder, I wish to direct attention to the hepatitis or cirrhosis frequently seen associated with chronic disease of the gall-bladder. Definite, well-defined, and advanced cirrhosis may be present, or there may be mild cirrhosis or hepatitis. Surgical procedures, especially those done on the biliary system in the presence of marked hepatic injury and insufficiency, are carried out with considerable risk.

The studies of Mann and his coworkers on the physiology of the liver, and on the functions of the impaired liver, seem to have some clinical application with reference to hepatic injury resulting from cholecystic disease. It has been demonstrated in the experimental animal that certain changes occur following removal of the normal liver. These changes are as follows: There is marked decrease in the concentration of blood sugar and cessation of formation of urea. Also there accumulates in the tissues of the hepatectomized animal a yellowish pigment which gives a positive reaction for bilirubin. One may say, then, that certain functions of the liver are fairly well defined; the liver has to do with the formation of urea; it is a storehouse for carbohydrates, it maintains a fairly constant level of blood sugar, and it acts as an organ for excretion of bile pigment.

In the experimental animal, very marked cirrhosis can be produced by the frequent administration of carbon tetrachlorid, which has a definitely toxic effect on the liver. If administration of this substance is stopped, rapid regeneration of hepatic substance takes place. Since this result is obtained experimentally by a toxic agent, and since the appearance of the liver compares in every way with that of cirrhosis seen in infection of the biliary tract, as has been mentioned, it seems fair to assume that with infection in the gall-bladder, and particularly in a case with stones in the common bile duct, a definite and constant toxic effect is exerted on the liver. If an animal in which cirrhosis of the liver has been produced by the injection of carbon tetrachlorid is fed the usual diet, consisting largely of proteins, death inevitably occurs in a few days. On the contrary, if a diet of carbohydrate is given, life of the animal is prolonged almost indefinitely. In other words, the injured liver does not tolerate proteins. In an attempt to estimate the value of these experimental results and to determine whether or not they have clinical application, cases of advanced cirrhosis, associated with biliary disease, have been treated preoperatively and postoperatively by means of a diet high in carbohydrate, with very gratifying results, as in the following case:

REPORT OF CASE

A woman, aged fifty-seven years, came to The Mayo Clinic August 28, 1928, complaining of severe attacks of pain in the upper right abdominal quadrant, characteristic of cholecystic disease and of thirty years' duration. Morphin had been necessary for relief. In the ten years previous to her admission at the clinic the attacks had become more frequent and of increased severity. She had been deeply jaundiced for three weeks. There was marked pruritus; the stools had been clay-colored for five weeks. There was a loss of eight pounds in weight. The patient was emaciated. The spleen could be felt about seven centimeters below the costal margin. The edge of the liver scarcely could be felt. There was moderate edema of the ankles. The systolic blood pressure was 170 and the diastolic, 100 millimeters of mercury. The pulse rate each minute was 88 and the temperature 97.6 degrees Fahrenheit. There was a distinct trace of albumin in the urine, and tests for bile were

strongly positive. The Wassermann reaction of the blood was negative. The concentration of blood urea was 64 milligrams in each 100 cubic centimeters. The coagulation time was ten minutes and the calcium time, six minutes. On test of hepatic function, retention of dye was graded three plus. The diagnosis was of chronic disease of the gall-bladder with stones in the common bile duct.

The patient was hospitalized for preoperative treatment. This consisted of a diet high in carbohydrate; 1000 cubic centimeters of a solution which contained ten per cent glucose and one per cent sodium chlorid was given intravenously, daily, and five cubic centimeters of a solution of calcium chlorid ten per cent were given in the vein every other day for six days, that is, three doses in all. At operation the liver was found to be small and high-grade cirrhosis was present. The gall-bladder was conspicuous by being only about 2 by 1.5 centimeters. The common bile duct was enormous and contained many huge stones. After removal of the stones a large T-tube was inserted in the common bile duct for the purpose of external drainage.

The postoperative treatment was similar to that given preoperatively in that large amounts of carbohydrate were given in the form of glucose intravenously, and corn syrup, milk, fruit juices, toast, and so forth, by mouth. The patient's convalescence was uneventful. The jaundice subsided in two weeks. The T-tube was removed on the twenty-first day after operation. The patient was seen two years after operation. She had gained thirty pounds, was of excellent color, and entirely free from symptoms. A test of hepatic function at that time showed only slight retention of dye. The concentration of blood urea was normal.

Comment.—This case is one of many in which this type of treatment has been given. The results are, to say the least, encouraging, and I think they warrant the clinical application of the information that has been obtained as a result of the animal experimental work done as a part of studies on the liver. If three-fourths of a dog's liver is removed, restoration takes place, so that the organ is of normal size in from three to five weeks. The restoration of the liver in the case which I have just cited is evidenced, I think, by the return of hepatic function approximately to normal in a period of less than two years.

CLASSIFICATION OF DISEASES OF THE GALL-BLADDER

The classification of diseases of the gall-bladder which has been used for the last few years is as follows: (1) Acute cholecystitis; (2) chronic cholecystitis, with or without stones; and (3) cholesterosis with or without stones.

Because of the fact that some types of disease of the gall-bladder seem to be of metabolic origin, Judd and McIndoe have suggested the following classification: (1) Acute cholecystitis; (2) metabolic cholecystic disease, with or without stones; and (3) clinical or functional cholecystitis disease.

Acute cholecystitis may have as its cause the organism of typhoid fever. It may occur with, or a number of years following, an attack of typhoid fever. Acute clinical cholecystitis can be produced in the experimental animal by intravenous injection of small amounts of Dakin's solution. The lesion produced in this manner compares favorably with that occasionally found in the clinically diseased gall-bladder. Actually, whether or not clinical cholecystitis occurs in the human being, we do not know. In acute, nonspecific cholecystitis the organisms which are found with great frequency are *Escherichia coli* and *Clostridium welchii*. The condition is usually accompanied by obstruction, which is caused by the impaction of one or more stones in the cystic duct.

In chronic cholecystic disease, bacteria are causal and stones may or may not be present. The condition may be the result of acute cholecystitis or it may come on insidiously. It is from the wall of the gall-bladder in this type of case that Rosenow and Wilkie have isolated the streptococcus.

In metabolic cholecystic disease with or without stones the condition to be met is primarily the so-called strawberry gall-bladder, or cholesterosis. Mentzer, in studying one thousand cases of this type, found that stones were present in 50 per cent. A history of typhoid fever was present in less than 10 per cent of these cases. Cholecystic disease, which frequently occurs during pregnancy, is found to be of this type. It is known that the concentration of blood cholesterol is definitely increased at the time of pregnancy and it seems logical to assume that, at least in certain instances, cholesterosis, or strawberry gall-bladder, is the result. When a single stone is found in this type of gall-bladder it is usually of pure cholesterol. The gall-bladder may be functioning normally, and there may be no symptoms of disease unless the stone obstructs the cystic duct. Infection may invade the strawberry gall-bladder, producing chronic bacterial cholecystic disease with stones, as acute cholecystitis.

Clinical or functional cholecystic disease makes up the third group, which is perhaps the most interesting. Although the symptoms of cholecystitis may be typical, there is little, if any, evidence of disease to be found grossly or microscopically. Yet if the history is typical, relief by removal of the gall-bladder is obtained in a high percentage of cases. Cholecystography has been a great aid in the diagnosis of disease of the gall-bladder. It is a functional test and should be used only to corroborate the clinical observations. If the power of absorption of the gall-bladder has not been interfered with, it can be clearly visualized. Occasionally the roentgenologic report is of a normally functioning gall-bladder, with stones. In all probability, most gall-bladders which contain multiple stones are definitely diseased; their visualization is brought about not because of their ability to absorb the dye, but because of the calcium oxalate in the wall of the gall-bladder. In other words, if a roentgenogram were made without the administration of dye, visualization would be the same. Of the symptoms of disease of the gall-bladder the most characteristic is pain. If this is present, regardless of the type of gall-bladder, cholecystectomy gives permanent relief in a vast majority of cases.

Cholangeitis may produce the symptoms of stones in the common bile duct. Treatment by external biliary drainage, using a T-tube, brings relief in the majority of cases.

Experimental physiologic investigation seems to have definite clinical application in that the preoperative and postoperative treatment in cases of hepatic cirrhosis complicating disease of the gall-bladder is best treated by feedings high in carbohydrate and low in protein.

The Mayo Clinic.

RESPIRATORY FAILURE IN POLIOMYELITIS—ITS TREATMENT WITH THE DRINKER RESPIRATOR*

REPORT OF CASES

By E. B. SHAW, M. D.
H. E. THELANDER, M. D.
AND
M. A. LIMPER, M. D.†
San Francisco

DRINKER[1] first described the construction and operation of his mechanical respirator in May 1929, and since that time there have been reported in the literature five cases[2 3 4] of respiratory failure due to poliomyelitis treated in the respirator. Several other cases were mentioned but not reported in detail. A Drinker respirator was installed in the Communicable Disease Department of the Children's Hospital, San Francisco, in August 1930, and a second machine the latter part of October 1930. Since the installation of the first respirator fifteen patients with varying degrees of respiratory involvement due to poliomyelitis have been treated in these machines. Most of these were in urgent need of artificial respiration and could not have survived long without some form of assistance. A few patients were in less desperate condition, but treatment in the respirator was used to relieve them of fatigue and anxiety, to secure rest for the involved muscles of respiration and, as they improved, to increase chest expansion.

Nine of our patients had respiratory difficulty due to intercostal weakness or paralysis; three of these patients died. One patient had chiefly diaphragmatic involvement and is apparently recovering. Five of the patients showed bulbar involvement and none of these survived.

The type of respiratory failure most favorable for treatment in the respirator is that due to intercostal paralysis. These patients, if left alone, may die early of asphyxia or later of pneumonia secondary to atelectasis. The diagnosis of intercostal paralysis is not difficult. In our series intercostal paralysis was constantly associated with paralysis of the muscles of the shoulder girdle on one or both sides, and frequently disappearance of the upper abdominal reflexes was noted just before intercostal weakness was first apparent. These patients show moderate increase in respiratory rate and the respirations are shallow, frequently asymmetrical and effected chiefly by the diaphragm. As the condition progresses, paradoxical respiration is noted in which the upper chest collapses synchronously with inspiratory effort of the diaphragm and rises during the act of expiration. This is, of course, due to failure of the upper intercostals to help in respiration and to their inability to maintain expansion of the upper chest cage against pull of the diaphragm. As a result there is very poor pulmonary ventilation, necessitating constantly increasing effort on the part of the diaphragm which leads to progressive fatigue of the diaphragm and finally respiration ceases. Sometimes the onset of diaphragmatic exhaustion is extremely abrupt.

The response of these patients to the respirator was very gratifying. Usually before their condition became alarming they were told that if they became too fatigued they could have the help of the respirator, and in several instances patients asked to be placed in the machine for a trial. A few of the children were very apprehensive and had to be given opiates over a short period when first placed in the respirator. None of these patients had any difficulty in adapting themselves to the rhythm of the machine. Brief case histories follow.

REPORT OF CASES

CASE 1.—A male adult of thirty-one years was transferred to the Children's Hospital from the San Francisco Isolation Hospital on August 17, 1930, the sixth day of his illness. He had at that time, in addition to complete intercostal paralysis, almost complete paralysis of both lower extremities and of the right shoulder, marked weakness of the abdominal muscles and urinary retention. He was extremely apprehensive and his condition appeared desperate. His breathing was entirely diaphragmatic, there were fibrillary tremors of the neck muscles, there was moderate cyanosis and the pulse was weak and irregular. The respirator immediately relieved the patient's distress, and the improvement in his condition was striking. He was kept in the machine almost continuously for one week, then was kept out for increasingly longer periods until the sixteenth day after entry, when he was able to remain out.

* * *

CASE 2.—A woman of thirty-five years, who entered with complete flaccid paralysis of both upper and lower extremities and left facial weakness, developed some evidence of intercostal weakness on August 16, 1930, but without cyanosis or any change in the pulse. On August 20, 1930, about midnight her respiration failed quite suddenly, apparently due to exhaustion of the diaphragm. She was comatose and extremely cyanotic and respiratory effort had practically ceased. The respirator was occupied at the time by Case 1, but it was possible to remove him for a time and this patient was placed in the respirator and kept there about ten hours. Her improvement was prompt. At the end of ten hours, however, the first patient's condition was so much worse that return to the respirator was imperative. The second patient was given artificial respiration manually together with oxygen throughout the afternoon and evening, despite which death occurred at 11:55 p. m. August 20, 1930. This patient's improvement while in the respirator was such that it seemed she might have survived if it had been possible to continue treatment in the machine. At autopsy the destructive lesions found in the cord were so complete and extensive that return of function would have been doubtful.

* From the Department of Communicable Diseases, Children's Hospital, and the pediatric department of the University of California Medical School, San Francisco.

† Research Fellow of the E. Charles Fleischner Fund for the Study, Prevention, and Treatment of Communicable Diseases in Childhood.

Editor's Note: Description of the Drinker Respirator by the American Medical Association Council on Physical Therapy is given in the "Journal of the American Medical Association," May 9, 1931, page 1580.

CASES 3 AND 5.—A boy of eleven years and a young woman of twenty years were both transferred from other local hospitals because of intercostal paralysis. Both showed extensive paralyses of the upper and lower extremities. When placed in the respirator their breathing was entirely diaphragmatic and they were somewhat cyanotic. These patients showed rapid return of function of the intercostal muscles and after four or five days of constant treatment in the respirator they were able to stay out for gradually increasing periods and at the end of nine days they remained out. The boy had a normal chest expansion at the end of three months. The young woman's chest expansion was somewhat less than normal when she left the hospital a month after the onset of her illness.

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CASE 4.—A girl of nine years entered Children's Hospital September 16, 1930. She had had a cough for about ten days prior to the development of symptoms of poliomyelitis. In the hospital she ran a high fever and continued to develop new paralyses over a period of several days until she had complete paralyses of both upper extremities, marked weakness of both lower extremities, and intercostal paralysis. Soon after the appearance of intercostal weakness she developed signs of a right-sided pneumonia. She was in the respirator from September 21, 1930, until her death on October 5, 1930. She was quite comfortable in the machine and her color was good except during occasional attacks of choking, apparently due to accumulation of mucous in the trachea or large bronchi. On October 5, 1930, she had such an attack and expired within a few minutes.

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CASE 6.—A girl of fourteen years entered Children's Hospital January 26, 1931. She had at that time generalized weakness of both upper and lower extremities and beginning intercostal weakness. The following day her breathing was entirely diaphragmatic and she was cyanotic. She was placed in the respirator and her color improved. On January 28, 1931, it was noted that the patient's right chest lagged and that the heart was shifted to the right. The left chest was strapped with adhesive to favor expansion of the right lung; the strapping was left in place for several hours and then sandbags were so placed as to impede movements of the left chest and favor expansion of the right; after two days the position of the heart had returned to normal. The patient's general condition was unsatisfactory during the first week; she looked toxic, was restless, showed evidence of vasomotor disturbance and her blood pressure was unstable. Intercostal expansion improved slowly during the first three weeks in the respirator, then quite rapidly during the fourth week, so that she could be left out of the machine for longer periods. During the fourth week the patient began to suffer from extreme mental depression due, it was thought, to prolonged illness and the fatigue of being moved in and out of the respirator. On March 1, 1931, her condition seemed such that it was thought justifiable to keep her for a time entirely out of the machine, but her depression continued, increased, and on March 5 she became irrational and semi-comatose. With this there was a little return of respiratory difficulty and it was thought her mental condition might be the result of prolonged partial anoxemia. She was returned immediately to the respirator, but despite satisfactory respiratory excursion her condition steadily grew worse, she lapsed into complete coma, there was marked neck stiffness, a left facial paralysis, and signs of an encephalitic process. Her temperature rose steadily until it reached 107.8 on March 7, when she expired while still in the respirator.

* * *

CASE 7.—A girl of twelve years entered Children's Hospital March 7, 1931, with slight iliopsoas weakness on the left, stiff neck, and fever. Her temperature remained elevated for a week after entry and she continued to develop new paralyses during this period. Slight intercostal weakness was apparent on March 13; at that time she had marked bilateral deltoid weakness and general weakness of the other muscles of the upper extremities and both lower extremities. On March 14 her breathing was entirely diaphragmatic and she complained of difficulty in breathing and pain in her chest and abdomen. She was placed in the respirator and her apprehension was relieved immediately. During the next week she was kept in the respirator for periods of twelve to eighteen hours daily, and thereafter she was given from two to five hours daily in the machine. After two days of treatment in the respirator her maximum chest expansion was 1.7 centimeters; nine days later her chest expansion was 3 centimeters; and at the present time, April 8, it is 3.2 centimeters. At present she breathes comfortably out of the respirator, but becomes a little dyspneic with talking, and with quiet breathing her upper intercostals, particularly, move very little; therefore it seems advisable to continue intermittent treatment in the respirator longer.

* * *

CASES 8 AND 9.—These patients were adults of twenty-three and twenty-six years respectively, who had intercostal weakness which was not marked enough to cause cyanosis, but which caused exhaustion and restlessness. Both patients were treated in the respirator for periods of one to three hours daily; Case 8 for twenty-five days and Case 9 for eleven days. The first of these patients had been irrational for a period of a week after his temperature reached normal. Thinking that his mental condition might be due to prolonged anoxemia, we placed him in the respirator for several hours and he remained perfectly rational from that time on. The other patient was relieved of restlessness and insomnia after short periods of treatment in the respirator had been instituted. Both patients showed considerable improvement in chest expansion following this therapy. We feel that the respirator is very useful in the treatment of cases such as these in which failure is only partial.

* * *

Our one case of diaphragmatic paralysis differed markedly from the cases of intercostal paralysis. While it is impossible to know what the outcome for this patient will be, her response to treatment in the respirator has been interesting.

CASE 10.—A girl of seven years was transferred to Children's Hospital from another hospital on February 21, 1931. Rapid, shallow respirations were noted on the second day of her illness. Respiratory difficulty became progressively more marked and she also developed complete paralysis of both lower extremities, and marked weakness of both upper extremities, and some difficulty in swallowing. On the fourth day of her illness examination showed some limitation of intercostal expansion and almost no diaphragmatic excursion on the right. Respiration was accomplished with effort, but there was no cyanosis. In the next eighteen hours her respiratory rate ranged from thirty-six to sixty per minute, and the following morning neither side of her diaphragm moved and she was cyanotic. It was explained to her that she could be placed in the respirator and be relieved of the great effort of breathing. At first she objected to being put into the machine and after the motor was started she asked once or twice to be taken out. Within ten minutes, however, she had fallen into a sound sleep and was breathing synchronously with the machine. Later in the day she objected strenuously to having the motor turned off even for a few minutes for necessary procedures. She required a higher negative pressure than we were accustomed to using with our cases of intercostal paralysis, about 20 centimeters of pressure being used early in her course, with frequent "deep breaths" at 25 to 30 centimeters. She also was more comfortable at a more rapid rate of respiration than that of fourteen per minute (which we commonly use), and through most of her treatment respirations were maintained at the rate of thirty per minute. Her maximum chest expansion on February 22, 1931, the day treatment in the respirator was started, was 0.5

centimeter. During the first week she could remain out of the respirator only a few minutes without becoming cyanotic and complaining bitterly of difficulty in breathing. During the second week she was able to be out from two to five hours of the day and from then until now, April 9, 1931, she has been in the respirator twelve to sixteen hours each day. Her chest expansion on March 12 was 2 centimeters, and at present is 2.5 centimeters. A fluoroscopic examination made on March 12 showed no movement of the diaphragm on either side. On March 31, examination showed occasional slight movements of the diaphragm, especially on the right. The patient still shows evidence of vasomotor instability at times and at present has a slight return of her neck stiffness without any rise in temperature. Our prognosis is still guarded. Recovery of function of the diaphragm will probably be slow, if it does take place.

* * *

The remaining five patients had respiratory difficulty due to bulbar involvement. Drinker, Shaughnessy, and Murphy [4] indicated that in bulbar involvement the respirator is apt to be ineffective. Our experience has borne this out. Death in cases of bulbar poliomyelitis is usually due not to respiratory failure alone, but to a number of factors. These patients may have superior involvement alone without paralysis of the extremities, or trunk or bulbar paralysis may be combined with spinal involvement. When respiratory difficulty is present in these cases there are almost always other evidences of bulbar involvement. Four of these patients had difficulty in swallowing; two showed hyperpyrexia; one had facial weakness and thick speech; another had marked facial twitching; most of them showed marked variations in pulse rate and all showed evidence of vasomotor disturbance. Diplopia, though not present in any of this series, is a fairly frequent part of the picture of bulbar poliomyelitis. Respiration in the bulbar cases is often irregular, usually rapid and at times characterized by frequent sighing or voluntary attempts at deep inspiration. Hiccough may occur.

The ages of the patients in this group were 9, 17, 18, 20, and 31 years. Three of these patients were treated in the respirator only a few hours, one remained in for fourteen hours and the other for a total of thirty-six hours. Two of these patients were comatose when put in the respirator; one of these showed striking improvement in color after being placed in the machine, in the other no effect was apparent. The three who were conscious experienced considerable relief from their respiratory distress and as long as they remained conscious their breathing was synchronous with the respirator; terminally their respirations became very irregular. Death in these patients was apparently due to vasomotor failure.

In all probability cases of bulbar poliomyelitis and respiratory failure will be encountered in which the respirator will aid in a more happy termination than these cited. Even in our fatal cases, however, the use of this device seemed well worth while if only for the subjective relief of the patient. In one of our patients progressive respiratory difficulty was present three days before her death, and the relief of her apprehension and struggle for breath was worth while despite the fatal termination.

SUMMARY AND CONCLUSIONS

Fifteen patients with varying degrees of respiratory involvement due to poliomyelitis were treated in the Drinker respirator.

Nine patients who had intercostal paralysis were treated in the respirator and all responded favorably to the treatment. One patient died because treatment in the respirator had to be discontinued; two died of other complications. Intercostal paralysis is the most favorable type of respiratory failure for treatment in the respirator.

One patient who had diaphragmatic paralysis has been treated in the respirator for a period of seven weeks. She has been kept comfortable and free from cyanosis and is showing some return of function of her diaphragm.

Five patients who were suffering from respiratory failure and who had bulbar poliomyelitis were treated in the respirator. All of these patients died, but in several instances considerable subjective relief was afforded the patients by treatment in the machine.

The Drinker respirator is a most valuable means of treating respiratory failure in poliomyelitis. Treatment in the respirator is not only an immediate life-saving measure, but is also of value in increasing chest expansion and providing rest during convalescence in milder forms of respiratory weakness.

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INFILTRATION ANESTHESIA IN OBSTETRICAL SURGERY*

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DISCUSSION *by Frank C. Ainley, M. D., Los Angeles; E. M. Lazard, M. D., Los Angeles; Lyle G. McNeile, M. D., Los Angeles.*

THIS report of one hundred and fifty-two cases of low transperitoneal section under infiltration anesthesia is offered in the hope that it will be of interest as an addition to the clinical evidence on the value of this type of anesthesia in abdominal delivery. For the sake of throwing additional light on certain points, a few brief references are made to a series of four hundred and fifty pelvic deliveries in which local anesthesia was used.

The only clinic in this country that has given this method of anesthesia a trial in obstetrical surgery is the Chicago Lying-in Hospital, under the direction of Dr. J. B. De Lee. The institution now has a record of at least 479 low sections under local (infiltration) anesthesia, for Dr. J. P. Greenhill of the staff recently informed me that 55 per cent of their total of 874 low sections had been so performed. Doctor Greenhill has performed 70 per cent of his own series of 111 cases (maternal mortality zero) under infiltration anesthesia. The hospital rating during the past year has been 90 per cent, and that of Doctor Greenhill's own work, 92 per cent.[1]

* Read before the Anesthesiology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

SOME EUROPEAN STATISTICS

The only really large series of cesarean sections under local anesthesia in Europe is, I believe, that of the Walthard clinic at Zürich. Walthard adopted this method in 1914 while at Frankfort. Frey of the Walthard clinic remarked in 1928 [2] that, except for the Basel clinic, the only others in Europe who had taken up the cause of local anesthesia for sections were Waldstein [3] and Frigyesi. Frey undoubtedly had in mind an active and consistent championship, since several clinics in Europe have reported at least some use of infiltration anesthesia in cesareans. For example, Schweitzer mentioned in 1927 that at Chemnitz sections were performed under local anesthesia in certain special cases.[4] Local anesthesia with classical section has been reported as early as 1906.[5] In 1914 Traugott reported twelve sections, some under local and some under sacral anesthesia, partly with favorable and partly with unfavorable results.[6] Adler, head of the gynecological department of the Wilhelmina Hospital, Vienna, stated in 1926, "The performance of section or the supravaginal amputation of the pregnant uterus can be entirely painless. I have performed about thirty of these operations in cases where general anesthesia was contraindicated, and had to supplement with ether only four times." [7] The next year these cases were reported as part of an impressive series of major gynecologic operations under local anesthesia.[8] Nevertheless, we are safe in saying that the body of clinical material, while larger in Europe than in this country, is small.

ADVANTAGES OF LOCAL ANESTHESIA

The chief advantages afforded by local anesthesia in cesarean section are: the sparing effect on the heart, the sparing effect on the respiratory system, the absence of accentuating influence on toxicity, the reduction in loss of blood, and, because of the preservation of uterine tone, that of the chance of uterine hemorrhage, a favorable influence on the organism in resisting infection, the elimination of shock, the marked influence in the reduction of gastro-intestinal disturbances, and the favorable influence on wound-healing. For the child, it affords relief from the asphyxiating effect of general anesthesia.

Effect on the Heart.—The sparing effect of local anesthesia on the heart becomes apparent when serious abnormalities of the heart are present. The writer was able to observe only a few such patients, eight in all. In these the pulse and blood pressure were unaffected during the operation; all returned to their beds without the aid of cardiac stimulation. One of the two deaths in the series occurred in this group on the fifth day; autopsy showed occlusion of the left pulmonary artery. The Walthard clinic at Zürich, however, has reported a group of nineteen patients with very grave heart defects where section was performed under local anesthesia; they attribute the absence of mortality in this group largely to the use of the local anesthesia.[9]

Effect on the Respiration.—The sparing effect on the respiratory tract was shown in my series by the absence of all respiratory complications, except for the fatal pulmonary embolus in the heart patient. I shall cite one case which illustrates the sparing effect of local anesthesia on the lungs. The patient, in an advanced stage of pulmonary tuberculosis, was a gravida one, aged thirty-seven years, who had been treated in a sanatorium four years before for chronic pulmonary tuberculosis. Four pulmonary hemorrhages occurred during gestation, and during the last four months the patient was confined to her bed. At the thirty-eighth week, I delivered a living child under local anesthesia. The operation and convalescence were uneventful, and the patient left the hospital on the fourteenth day.

Interesting in connection with the absence of pneumonia in the series is the fact that it contained twenty-one eclamptic or preëclamptic patients. As regards the frank eclamptic patients, with more or less edematous lungs, the predisposition to postoperative pneumonia is well known. Of five deaths from postoperative pneumonia in seventy-two cesarean section patients under general anesthesia at the Walthard clinic, four were eclamptic patients.[10] The record of that clinic of two hundred and eighty sections under local anesthesia (with no eclamptic patients, however) without a case of pneumonia is surely evidence of the favorable influence of this type of anesthesia.

When pregnancy is complicated by toxic symptoms, inhalation anesthesia is an aggravating element. In the toxic patient the carbon dioxid combining power is low; the kidneys are impaired and there is more or less urinary suppression; uric acid is increased, showing liver impairment; acidosis is present, and increasing as time goes on; the blood pressure is high; and the tissues are as a rule in a state of edema. All the vital organs are damaged to the breaking point. Stander of Baltimore states that ethylene, ether, and chloroform produce much the same blood changes as does eclampsia, and that sparing the toxic women from these substances works to their benefit. He adds, "The results of our experimental work on general and local anesthesia lead to the conclusion that in certain severe types of eclampsia it might be advisable to end pregnancy under local or spinal anesthesia, but as yet we have no clinical experience in support of this contention." [11] He has found that almost lethal doses can be injected into dogs without any material change in the blood chemistry of the animals. He states further, "In experiments with novocain or procain, injected subcutaneously, I have been unable to detect any changes in the blood constituents due to anesthesia. A very large dose of procain (twenty cubic centimeters of a two per cent solution) has no effect on the carbon dioxid combining power, sugar, lactic acid, uric acid, inorganic phosphorus, nonprotein nitrogen, or ureanitrogen of the blood. It follows that the use of such a local anesthesia would probably be quite safe in eclampsia."[12] Dr. John Polak, in the discussion of Doctor Stander's article, con-

cludes that anesthesia is the thing to be avoided in the eclamptic patient.[13]

My group of twenty-one eclamptic and pre-eclamptic patients delivered by section will illustrate the results of local anesthesia with toxic patients. Eleven of these patients, before I had ever seen them, had had convulsions antepartum. A twelfth patient had a first convulsion on the table. There was one death, in coma, on the fifth day, following ten postpartum convulsions. Two others of those who had had eclamptic outbreaks had further convulsions postpartum. Nevertheless, the smoothness of convalescence exceeded considerably the expectation for such a group.

The influence of infiltration anesthesia in reducing loss of blood is favorable in any surgery. In addition, the maintenance of uterine tone has a high value in the prevention of uterine hemorrhage. This anesthesia may be termed a prophylactic against postpartum hemorrhage. No patient in this series was transfused because of hemorrhage. Three, however, received blood for other reasons.

This favorable influence was especially observable in the cases of placenta previa, of which there were twelve, and in the cases of premature separation of the placenta, of which there were four. Frey directs especial attention to the value of local anesthesia in cases of section in placenta previa, on the basis of eighty patients at the Walthard clinic, with one death, and that patient having had as a complication an extensive carcinoma of the stomach, and other conditions.[14]

Disadvantages of General Anesthesia.—There are two disadvantages of general anesthesia which have a special significance in patients in whom section is performed late in labor: its influence in increasing acidosis, and its tendency to lower the resistance of the peritoneum to infection. The former condition is already present in the majority of patients who have been long in labor; and the risk of infection has been rising with the progress of labor. It has been stated that anesthesia causes disturbance in the oxydation of the cells; that the result is the disappearance of alkalinity; that this condition, when not overcome, is manifested as stubborn vomiting, meteorism, and headache.[15] From the Women's Clinic of Berlin came a study by Schultze on the marked effect of general anesthesia in impairing metabolic processes, under the title "Narcosis Acidosis."[16] As to the second disadvantage, Finsterer has remarked the unfavorable influence of ether and chloroform on the resistance of the peritoneum to infection.[17] The results in those of the series that were operated late in labor illustrate the desirability of avoiding these disadvantages by substituting local for general anesthesia. Among this group were a few "neglected cases." I shall give the details of one case. When I first saw the patient she had been in labor for thirty-eight hours; dilatation was incomplete; the head was at the pelvic brim. The convalescence was stormy, but the patient left the hospital on the fourteenth day. While the laparotrachelotomy possesses inherent factors of safety which make section possible in cases that have had a test of labor, I believe that to the use of local anesthesia is due the absence of maternal mortality in this group.

Absence of Shock.—A notable advantage of local anesthesia is the absence of shock. I do not mean merely the negative one of the avoidance of the risk of shock from too much anesthesia. Infiltration anesthesia cuts off the afferent impulses which reach the vital centers when the patient is asleep but the tissues are not. Again, there is little chance with local anesthesia of the rough handling of tissues, the tugging on intestines and pelvic viscera, improper retracting, or jabbing with rough sponges, any of which may cause shock, as the patient will be quick to let you know of any such breech of surgical technique. The tranquil belly, also, is favorable to the avoidance of shock, for the surgeon is spared the necessity of fighting back out of the field intestines forced there by respiration.

Because of the excellent uterine tone, the placenta usually separates spontaneously.

Accurate adaptation of the edges of the uterine incision is insured because of the good uterine contraction and of the absence of blood in the field.

Less Gastro-Intestinal Disturbance.—We now reach the consideration of what I believe to be one of the most important of the advantages of local anesthesia. The small amount of gastro-intestinal disturbance in this series can be accounted for only by the substitution of local for general anesthesia. It is true that the type of operation removes some of the sources of disturbance that are possible in classical section; nevertheless, as long as there is still the influence of general anesthesia we can hardly expect to get through one hundred and fifty-two operations with only three cases of distention (and only one of these severe) and with an almost total absence of nausea and minor discomforts. Only twice was gastric lavage necessary. The serious patient was relieved by enemata and hypertonic salt solution, administered intravenously. There were two other complications which will be considered in a moment. The remaining patients were really comfortable, tolerating water by mouth from the start, so that there was no need of supplying fluids by rectum, and usually beginning soft diet on the second day.

One of the complications just referred to was an intestinal obstruction due to the attachment of a loop of the ileum to the stump of a freshly removed myoma. The other, due to a surgical mishap, the catching of a loop of gut in the suture of the incision, resulted in a parting of the incision (the only instance of disturbed wound-healing). As it was precisely in these two patients that the symptoms of surgical shock had appeared, the situation of both patients was for a time most grave.

Wound-healing in this series, with the one exception described, was excellent.

All the complications and disturbances in the series have been mentioned, with the exception of a case of phlebitis of the left leg in one of

the heart patients, which developed on the fourteenth day. The number of patients whose convalescence was disturbed in any manner was small; but the point that I wish to stress is that in the large remaining number the recoveries were on a much higher level than the usual good recoveries. This favorable result I ascribe directly to the use of local anesthesia.

Local Anesthesia and the Child.—Up to this point we have dealt with the advantages of local anesthesia in cesarean section only from the standpoint of the mother. The undesirable effect of general anesthesia on the child needs little comment. The experience of the Zurich clinic has shown that the condition of the child on delivery is directly dependent on the duration of the narcosis preceding its birth. With pure chloroform narcosis, the children are free from apnea only within the first fifteen minutes. Since it was possible only in exceptional cases to deliver the child within twenty minutes after the beginning of the narcosis, and since the latter was often supplemented with ether, only a very few babies were free from asphyxia.[18] Frey, who made this report, referred to the animal experiments of Küstner, which showed that after a very few minutes of deep general narcosis the respiratory centers of the young are so seriously affected that death results unless oxygen is administered. He quoted, as well, the figures of Denker in a series of extraperitoneal sections, which showed that only 3.4 per cent of the babies were free from apnea.

As I use local anesthesia in pelvic deliveries as well as in abdominal, I have had the opportunity to observe in several hundred cases the advantage to the child resulting from the elimination of general anesthesia. All children that are normal, viable, and uninjured breathe spontaneously. This group of pelvic deliveries under local anesthesia is of interest, also, in its support of my observations in the series of cesarean sections that this type of anesthesia is without influence on the heart tones. I mention this point because, although in many hundred pelvic deliveries in European clinics there is no complaint on this score, one report contained the statement that in three cases out of a series of thirty under local (pudendus) anesthesia the heart tones weakened just after the administration of the local anesthesia, so that the babies had to be delivered with forceps.[19] Benthin of the Zangemeister clinic (Königsberg), replied in discussion that they had not found any noticeable alteration in the heart tones.[20]

TECHNIQUE OF LOCAL ANESTHESIA

Simplicity of the Technique in Local Anesthesia.—Not least among the advantages of infiltration anesthesia is its simplicity. A solution of one-half of one per cent novocain is prepared, to which is added five minims of suprarenin to each 100 cubic centimeters of solution. The total amount required for low section varies from 250 to 350 cubic centimeters. Farr puts the dangerous dose at 750 cubic centimeters of one-half of one per cent solution. The solution is administered with one of the numerous automatic syringes, or with a battery of 20 cubic centimeters Luer syringes. A wheal is made at the upper end of the proposed incision with a fine needle. Through this wheal the fluid is distributed the full length of the incision down to the fascial plane. The skin incision is made immediately, and without pain. Next the recti muscles are infiltrated and incised, so that the preperitoneal space is exposed. This is infiltrated, and the peritoneal cavity is opened. The peritoneum covering the lower segment is raised by a gigantic wheal, and the fluid is pressed laterally so that the peritoneum is raised off the lower segment of the uterus. The infiltration is complete, except that about 20 cubic centimeters are put into the belly of each rectus muscle before the local anesthetic is put aside. If the infiltration has been carefully done, about 300 cubic centimeters, or less, of the solution may have been used. This is sufficient to continue the anesthesia throughout the operation.

The success or failure after the infiltration is done depends upon the skill and dexterity with which the surgeon handles the tissues. All tissues must be cut with the keenest of instruments; all retraction should be done manually, and with care; the suction pump should replace the sponge. The handling of the peritoneum demands the greatest care; and all traction on pedunculated organs should be avoided.

THE OBJECTIONS TO LOCAL ANESTHESIA

With these advantages in favor of local anesthesia, what objections can account for the general reluctance to adopt its use in abdominal deliveries? It has been asserted that it is time-consuming. If the dictum of Braun [21] regarding infiltration anesthesia, namely, to infiltrate, then wait at least several minutes, often longer, held, this might be a serious objection. Wischnewski [22] asserts that this unnecessary rule of Braun's has prevented infiltration anesthesia from taking its rightful place, and has resulted in preference being given to various block anesthesias. As a matter of fact, the low transperitoneal section takes only slightly longer under local than general anesthesia. To complete this operation in less than one hour from the beginning of the general anesthesia would be difficult; this is the average time of this series under local anesthesia. It may be said that local anesthesia does not consume time, but allows time if it is desired.

Again, the fear of psychic shock has been advanced to account for this reluctance. The writer believes psychic shock exists chiefly in the surgeon's mind, and that the patient to whom the advantages have been explained has no more fear of local than of general anesthesia. High-strung patients have not proved poor subjects for local anesthesia.

Surgeons who perform other operations under local anesthesia may hesitate at the prospect of the absence of the soothing morphin preparation, the use of which gives apneic babies—though in not any such degree as does general anesthesia.

Allonal, either per os or intramuscularly, proves a fairly satisfactory substitute. Some of the patients do complain of a certain amount of pain, and there are a few painful spots, notably during the delivery of the head. About 40 per cent received some analgesia. Often this was merely to take the edge off labor pains; chloroform was used for this purpose. About 60 per cent received some form of morphin after the baby was delivered. Of the patients whose tubes were excised, some received deep ethylene anesthesia. The patients in whom complications were encountered (fibroids or cysts) received general anesthesia during the removal of the pathologic tissue. The writer wishes also to add that ten of the patients were not awake, as they had received introductory 10 grams of sodium amytal sleep. Not one of the patients who were awake, however, requested to be put to sleep during the section part of the operation.

The significant advantages which have been enumerated and illustrated in this paper need not be withheld from the patient for fear she will be subjected to a disagreeable experience. The writer found the splendid response of the patients to be by no means the smallest element of satisfaction in this work.

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DISCUSSION

FRANK C. AINLEY, M. D. (1136 West Sixth Street, Los Angeles).—Doctor Pierce is to be congratulated upon the excellent results which he has obtained in this series of cases, and I am glad to thank him for presenting the paper with its valuable material.

My experience with infiltration anesthesia in obstetrical surgery is limited and does not qualify me to criticize the procedure. However, the experience which I have had with it leads me to believe that the incidence of postoperative psychic shock is a point of importance to be considered.

Doctor Pierce's cases were very comfortable after operation and wounds healed well, but I am of the opinion that equally good results can be obtained with the use of nitrous oxid and oxygen anesthesia.

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E. M. LAZARD, M. D. (1930 Wilshire Boulevard, Los Angeles).—Doctor Pierce is certainly to be congratulated on the results of his work on infiltration anesthesia in obstetrical surgery, as well as for the careful and complete consideration of the advantages of local anesthesia as contrasted with general anesthesia. Personally I cannot speak from experience, as what limited experience I have had with it has been in some of the cases at which I have been privileged to be present with Doctor Pierce in several of the low cervical sections. This procedure seems to be particularly indicated where it is necessary to operate on toxic or eclamptic patients, as undoubtedly a great part of the added danger of operative interference in these cases has been due to general anesthesia.

This report is a great inducement to perfect one's self in this method, as results such as this seem to indicate the superiority of this method of anesthesia.

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LYLE G. MCNEILE, M. D. (Pacific Mutual Building, Los Angeles).—Too little consideration is given by obstetrical surgeons to the importance of carefully selecting an anesthetic. In general the plane of anesthesiology is very low. While, as Doctor Pierce has pointed out, the dangers of general anesthesia are generally recognized, obstetricians as a rule have been very backward in adopting procedures which are not in general use. Doctor Pierce, in his summary of the dangers of general anesthesia, omitted one factor which, particularly in the toxemias of pregnancy, may be of vital importance. I refer to the causation or augmentation of an acidosis, which seems definitely associated with the use of inhalation anesthesia. I believe that Doctor Pierce omitted an important although indirect danger from general anesthesia which may be called unnecessary traumatization of the tissues, which may result from unnecessary haste or needless and rough handling of the tissues, made possible as the result of the patient's unconsciousness. Doctor Pierce has given us a comprehensive outline of the present status of local anesthesia, particularly as applied to cesarean sections. In the average patient in which cesarean section is done for disproportion, if the patient is in good physical condition, adequate hospital facilities, and a trained anesthetist available, I do not feel that the advantages of local anesthesia are particularly marked. In my private practice and at the Los Angeles General Hospital, I have come to the conclusion that local anesthesia has as its field of greatest usefulness the border-line case or the case which is not in good physical condition. When abdominal delivery is indicated in the patient with a cardiac condition, particularly with a decompensated heart; in a toxemia of pregnancy, or as a result of any kidney condition; or in a patient having either an actual or a potential pulmonary condition; in the very rare patient whose resistance has been lowered as a result of a long-standing infection, particularly pyelitis; or the patient with marked primary or secondary anemia, I believe general anesthetics are contraindicated, and the use of local anesthesia may well insure a greatly improved postoperative result.

Doctor Pierce has adequately presented the essential steps in technique. I agree with Doctor Pierce that the fear of psychic shock has been greatly exaggerated, but I feel that he has not adequately stressed the importance of explaining to the patient in great detail the procedure which is to be followed and the advantages to her and to her baby. This explanation should be given before the patient is placed upon the table, and the surgeon should not neglect to address a few words of encouragement to the patient from time to time during the course of operation.

FOREIGN BODIES IN THE AIR PASSAGES—THEIR DIAGNOSIS AND REMOVAL*

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DISCUSSION *by Maurice Leopold Lubin, M. D., San Francisco; Simon Jesberg, M. D., Los Angeles.*

THE diagnosis of foreign bodies in the trachea and bronchi and the mechanical problems involved in their removal are at times sufficient to tax the skill, judgment, and resourcefulness of the endoscopist. Each patient offers an individual problem and, though one patient's condition may be diagnosed easily without bronchoscopic examination, another may require bronchoscopy before the presence of a foreign body can be ruled out. Familiarity with the essentials of the history, physical findings, roentgen shadows, and bronchoscopic inspection is indispensable for correct diagnosis and treatment.

HISTORY

The patient's story is highly significant. If a previously healthy child is found in a paroxysm of coughing, choking, and wheezing, associated with cyanosis, the presence of a foreign body in the air passages is very probable. Children seen after the acute paroxysm has passed may have only slight cough, low grade fever, and wheezing. Even though the acute initial attack has subsided, the patient should not be allowed to go untreated.

An adult may give a definite history of the aspiration of a foreign body and efforts on his part to remove it. The symptoms are the same as those described in the case of a child, and are attributable to two factors:

1. Irritation caused by the presence of the foreign body.

2. Mechanical interference with the entrance and exit of air.

The bronchus can develop a tolerance to the presence of certain inorganic foreign bodies, but the mechanical factors interfering with the normal air flow persist unless the foreign body so shifts in position as to permit the usual passage of air to the lung. When symptoms persist the picture may suggest bronchitis, lung abscess, asthma, or bronchiectasis, depending on the type of bronchial occlusion and the complications.

The severity of the symptoms and the extent of the findings will depend on the location of the foreign body and the amount of lung tissue deprived of its normal air flow. If a small minor bronchus is involved, the symptoms and findings may appear trivial; but a foreign body so situated in the trachea or at its bifurcation as to interfere with the air flow to both lungs will produce a startling array of symptoms and extensive bilateral signs. Such a picture is the result of the sudden and marked reduction in vital capacity (Fig. 1).

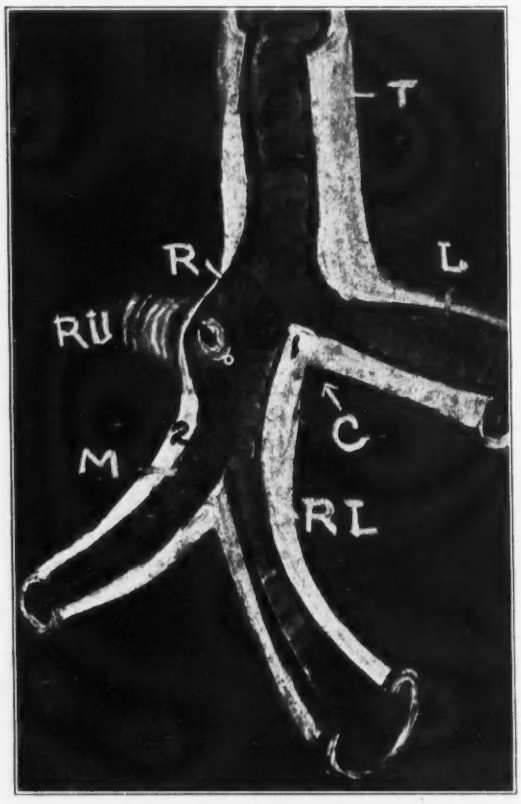

Fig. 1.—Diagram of right tracheobronchial tree: T—Trachea. C—Carina (bifurcation of the trachea). The foreign body (1) in the right main bronchus (R) interferes with the air flow to the entire right lung, leads to a tremendous reduction in the vital capacity, and is associated with grave symptoms and extensive findings. These findings are limited to the right lung unless secretions spill across the carina (C) ino the left main bronchus (L). If the foreign body shifts in position, drops deeper into the bronchus and lodges at site number 2, the air can enter the right upper lobe (R U) and the right lower lobe (R L), but not the middle lobe (M). The reduction in the vital capacity is less marked, the symptoms are less severe, and the abnormal physical signs are limited to the middle lobe.

PHYSICAL FINDINGS

Examination will show abnormal chest signs having a relation to:

1. The position of the foreign body.

2. The type of obstruction to the air flow.

3. The amount and location of intrabronchial secretion associated with the presence of the foreign body.

Position of the Foreign Body.—The higher up in the tracheobronchial tree the foreign body settles the more alarming will be the signs and symptoms.

Type of Obstruction to Air Flow.—An intrabronchial foreign body may be so situated as to permit the normal air flow, or it may prevent either entrance or exit of air, or both. When both entrance and exit are shut off, an obstructive pulmonary atelectasis follows; but if air can get past the foreign body and cannot escape, an obstructive pulmonary emphysema ensues. The abnormal physical findings in patients with intra-

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bronchial foreign bodies will most commonly be those of an obstructive emphysema or obstructive atelectasis.

Obstructive Emphysema.—In this condition air is trapped beyond the foreign body and produces an overdistention of that portion of the lung supplied by the obstructed bronchus. The outstanding physical signs are diminished tactile fremitus, hyper-resonance or high-pitched tympany, diminished or absent breath sounds, and diminished spoken and whispered sounds; râles most likely will be absent.

Obstructive Atelectasis.—In cases of obstructive atelectasis the foreign body is sometimes lodged so firmly in the bronchus as to occlude completely the bronchial lumen. This blockading process is often increased by the edema and granulation of the bronchial mucous membrane. In such instances no air can enter or escape from this portion of the lung. The air that is present beyond the foreign body is absorbed and a localized pulmonary atelectasis ensues. The chest wall is retracted over the diseased area. the percussion note is dull or flat, râles are absent, and the heart, trachea, and diaphragm are displaced toward the side of the atelectasis. Expansion, tactile fremitus, breath sounds, voice sounds, and whispered sounds are diminished or absent. If the atelectatic portion is immediately adjacent to the trachea or main bronchus, all the signs of consolidation may be elicited.

Intrabronchial foreign bodies without obstructive atelectasis or obstructive emphysema may give no abnormal chest findings, as air can enter the bronchus distal to the foreign body and return without hindrance.

Amount and Location of Intrabronchial Secretion.—When the foreign body is associated with excessive intrabronchial secretion or pus, these secretions will follow the laws of gravity and collect at the most dependent areas. These areas will be different, depending upon whether the patient is erect, flat, or lying on his side at the time of the examination. We have designated this flow of intrabronchial secretion as "internal drainage" and have fully discussed it in a previous paper.[1] Suffice it to say that abnormal physical findings will be elicited over the areas to which the secretion spills and consequently may be on the side of the chest opposite from the foreign body (Figs. 2a, 2b).

ROENTGEN AND FLUOROSCOPIC EXAMINATIONS

Every patient suspected of having a foreign body in the air passages should be examined both fluoroscopically and roentgenologically. Special care should be taken to differentiate foreign bodies in the esophagus from those in the tracheobronchial tree (Figs. 3 and 4).

If a tracheobronchial foreign body is present, one may note respiratory alterations in lung density and shifts in position of the heart, mediastinum, and diaphragm on fluoroscopic examination. These same changes may be noted on serial x-ray films taken at the end of inspiration and expiration, respectively. The area examined should include the region from the nasopharynx to the tuberosities of the ischia. Roentgenograms of these areas are taken to recognize multiple, distantly separated foreign bodies and to localize those which might have been in the bronchus but were later coughed up into the nasopharynx and swallowed. Such foreign bodies will sometimes be found in the stomach or intestine. Foreign bodies opaque to the x-ray usually will be well

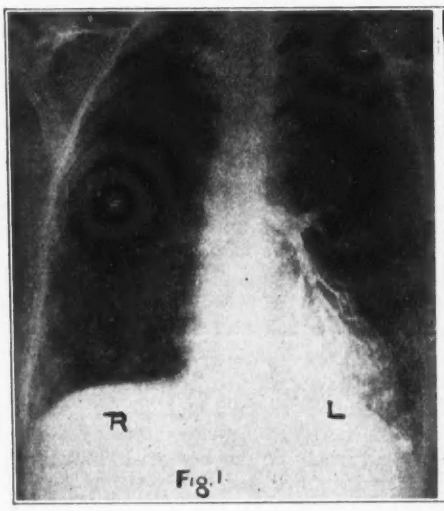

Fig. 1.—Roentgenological evidence of "internal drainage": X-ray of patient in whom iodized oil was introduced through the mouth into the left main bronchus without any type of anesthesia. Note the absence of oil in the bronchi of the right lung.

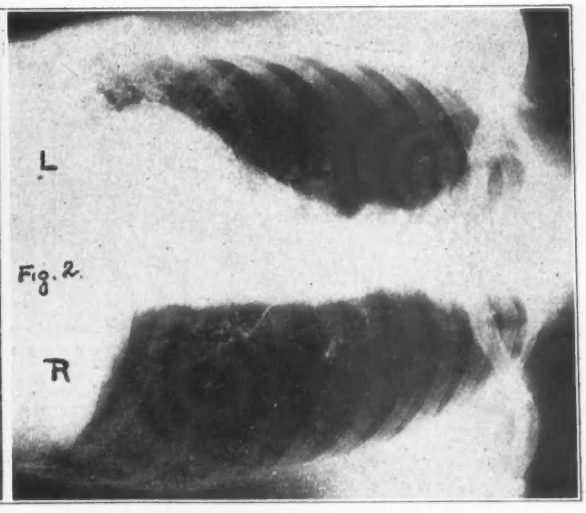

Fig. 2.—X-ray of the same patient taken after he had been lying on the right side for a few minutes. The oil has begun to spill over from the left side into the right. There was no cough or expectoration during the interval between the taking of films 1 and 2. This illustrates the principle of "internal drainage" and accounts for the production of abnormal physical findings at sites quite distant from the original lesion.

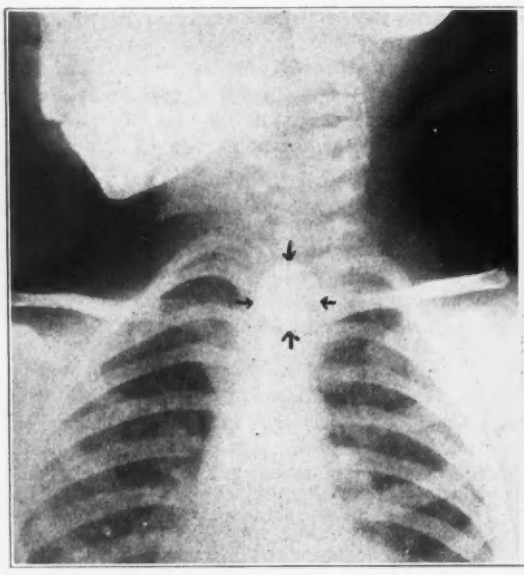

Fig. 3.—Coin in the esophagus: The coin was removed by esophagoscopy and the patient made an uneventful recovery. It is important to differentiate tracheal from esophageal foreign bodies. Foreign bodies in the esophagus have their widest surface showing on the anteroposterior x-ray plates, but tracheal foreign bodies show up best on the lateral plate. This difference is accounted for by the necessity of the foreign body assuming an anteroposterior position in order to pass between the vocal cords into the trachea. The opposite plane must be assumed to pass behind the larynx into the esophagus. (Compare with Fig. 4.)

Fig. 4.—Coin in the esophagus (lateral view, same patient as Fig. 3). The narrow edge of the coin is seen behind the trachea. T—Trachea. C—Coin in the esophagus. A large esophageal foreign body may press forward on the posterior tracheal wall, compress the trachea, interfere with air flow to the lungs, and give signs and symptoms suggestive of a tracheal rather than an esophageal foreign body. When a foreign body blocks the esophagus, the upper esophageal secretions well up and spill down over the interarytenoid space into the trachea and bronchi. Cough, wheezing, dyspnea, and expectoration follow, and abnormal physical findings are elicited over the lungs. A little bismuth or barium given by mouth will aid in the differential diagnosis of nonopaque tracheal and esophageal foreign bodies.

visualized, but nonopaque objects are diagnosed on a basis of the type of obstruction which they produce: obstructive emphysema or obstructive atelectasis (Figs. 5 and 6). A nonopaque intrabronchial foreign body which does not interfere with the ingress and egress of air may show no evidence of its presence fluoroscopically or roentgenographically, and this is the type which requires a bronchoscopic examination for diagnosis as well as treatment.

As soon as the diagnosis is established, the physician should insist on the immediate removal of the foreign body by means of the bronchoscope. If the diagnosis remains uncertain but possible, bronchoscopy has a twofold purpose, namely, diagnosis and treatment.

BRONCHOSCOPY

From the very start some cases are exceedingly urgent, and the symptoms are so marked that bronchoscopy has to be done without waiting for any preliminary preparation or cocainization of the patient. One who has had a foreign body in the tracheobronchial tree for weeks or months may be relatively free from symptoms. This case offers less of an emergency, and the preliminary preparation and cocainization can usually be carried out over a longer period of time. However, this patient suddenly may become a desperate risk because of an unfavorable shift in the position of the foreign body. This turn for the worse may occur when the services of a trained bronchoscopist are not available, and death may take place before assistance can be had. For this reason the prompt removal of intrabronchial foreign bodies should be insisted upon.

BRONCHOSCOPIC TEAM

The importance of a highly trained operative team in the removal of foreign bodies in these emergency cases cannot be overemphasized, as speed and skill determine the outcome. Expeditious removal of the foreign body is dependent on the help of trained assistants. As emphasized by Chevalier Jackson,[2] periods of emergency are no time for this training; therefore a team must be developed before such emergencies arise so as to function smoothly when suddenly called upon.

ANESTHESIA

We use local anesthesia almost exclusively. Only in rare instances do we use ether, and when employed it is generally for a child. We believe that the amount of trauma and incident risk are less under a short, light ether or nitrous oxid anesthesia than would be the case with a struggling child under a local anesthetic.

TECHNIQUE

All the laryngeal and bronchoscopic work is done under direct vision with good illumination. The laryngoscope and bronchoscope are sepa-

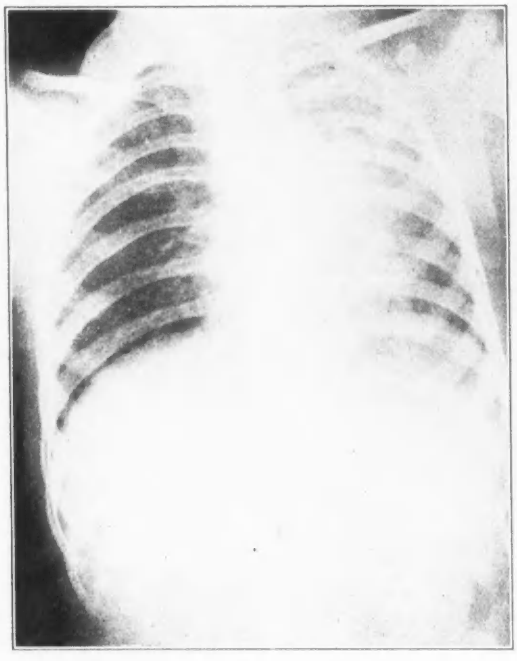

Fig. 5.—X-ray plate of child with watermelon seed in the right main bronchus: The seed itself is not seen on the x-ray plate, but there is an obstructive emphysema of the right lung. On this side the chest wall is distended, the intercostal spaces are widened, the diaphragm is depressed, and the lung field is exceptionally clear. The heart is displaced to the left and the left lung contains less air than the right. Fluoroscopically the heart and mediastinum shift to the left on expiration, but return on inspiration. (Compare with Fig. 6.)

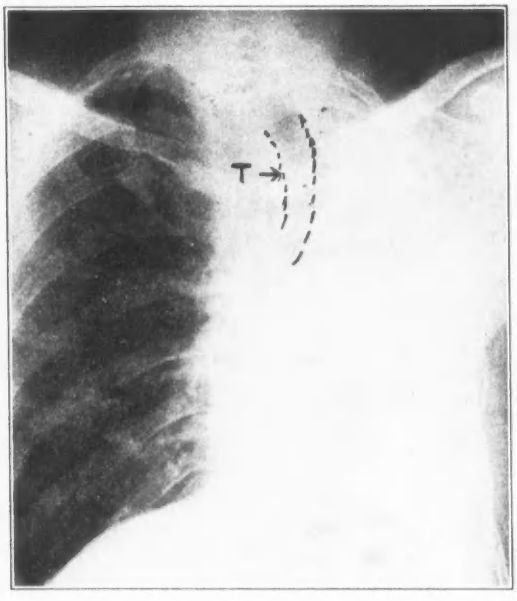

Fig. 6.—Obstructive atelectasis of left lung: T—Trachea. The left lung field is gray and on this side the thoracic cage is narrowed, sunken, and retracted. The left intercostal spaces are also narrowed. The heart and trachea are drawn tremendously to the left. The diaphragm is usually elevated on the affected side.

rately lighted (Fig. 7). The laryngoscope is employed to raise the epiglottis and to bring the laryngeal opening into view. This can be done in a few seconds. With this instrument held in position, the bronchoscope is inserted into the trachea. The laryngoscope is then withdrawn, but the bronchoscope is kept in place (Fig. 8).

BRONCHOSCOPIC INSPECTION

Preliminary studies may give a clue to the probable site of the foreign body, and this region is the first to be examined through the bronchoscope. But if the foreign body is not on the side where physical findings and roentgenograms located it, the opposite bronchial openings must be examined, as the foreign body may have moved over from one lung into the other. This entire inspection usually can be done in less than one minute.

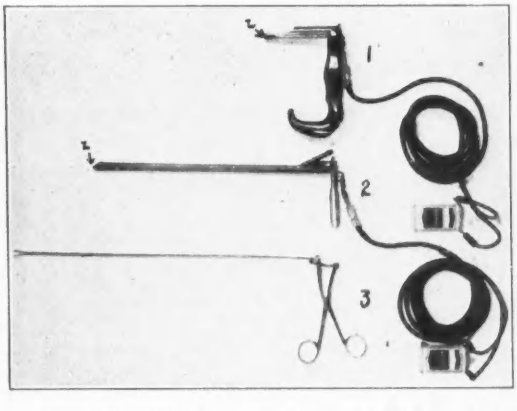

Fig. 7.—Bronchoscopic instruments employed for the removal of watermelon seed from the bronchus. The illumination is direct; the lights (L) are situated at the end of the instrument which passes into the depths of the bronchi. 1, Jackson's laryngoscope; 2, Jackson's infant bronchoscope; 3, foreign body forceps.

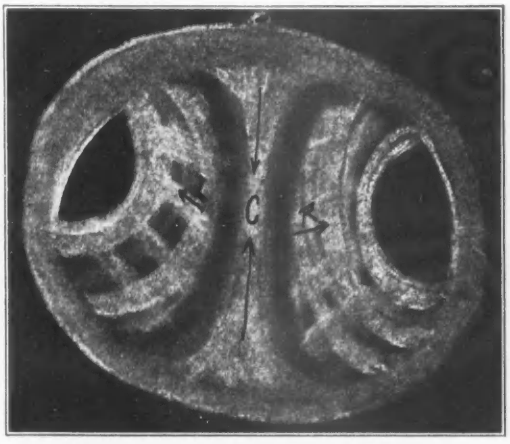

Fig. 8.—Bronchoscopic view at the region of a normal carina. (Diagrammatic sketch.) C—Carina (bifurcation of the trachea). R—Right main bronchus. L—Left main bronchus.

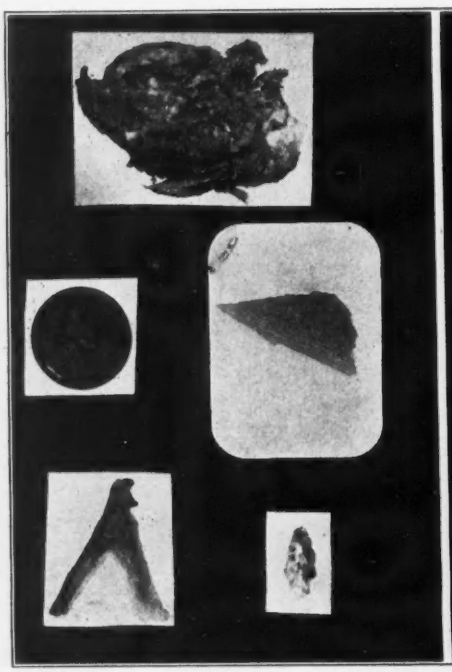

Fig. 9.—Types of foreign bodies removed from the "food and air passages."

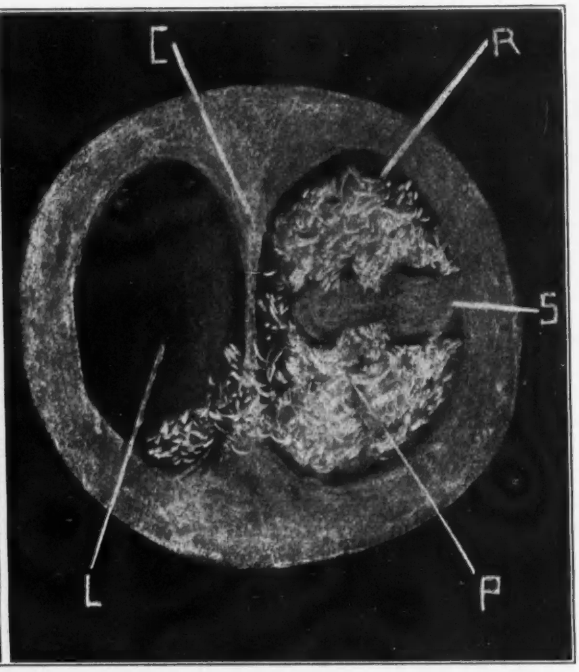

Fig. 10.—Sketch of bronchoscopic view of watermelon seed in right main bronchus. Extensive secondary changes have not occurred. S—Watermelon seed. R—Right main bronchus. P—Foamy secretion accumulated above and below the seed and spilling over across the carina (C) into the left main bronchus (L). This "internal drainage" of secretion into the left bronchus accounts for the abnormal physical findings on the left side. The pus was removed by bronchoscopic suction and the foreign body was then withdrawn. Patient made a complete recovery, and the x-ray picture returned to normal.

MECHANICAL REMOVAL OF THE FOREIGN BODY

Having located the foreign body, one's first impulse is to grasp it hastily and quickly remove it. Haste here is not wise. Before an attempt is made to extract a foreign body, it should be studied from all possible angles to determine the mechanical difficulties present and to select the best method of removal.

As a rule all foreign bodies are removed much more readily if bronchoscopy is done immediately. If days are allowed to pass before treatment is instituted, one has to deal not only with the foreign body itself but also with the secondary inflammatory changes which result from its prolonged stay. The mechanical principles involved in the removal of foreign bodies depend largely upon whether the object is smooth or sharp—except for peanuts and cockle burs, which are in a class by themselves because of the rapid and terrific inflammatory reaction which they set up (Fig. 9).

Smooth Foreign Bodies.—If the patient is seen before severe secondary inflammatory changes have taken place, the removal of a smooth foreign body can be accomplished quite readily (Fig. 10). Smaller objects can be removed through the bronchoscope itself, but those too large to pass through the instrument must be removed by a special technique (Figs. 11 and 12).

Sharp Foreign Bodies.—In dealing with sharp objects one must be sure that the point of the foreign body is not imbedded. Traction under such circumstances will result in an abrasion, deeper imbedding of the point, or an actual perforation, and may be followed by a mediastinal pneumothorax, mediastinitis, and death. To avoid these dangers the sharp point should be dislodged from its position in the bronchial wall and turned with rotating forceps or with the tip of the bronchoscope. If this maneuver is successful, the sharp point will be so turned as to permit removal with the slightest amount of trauma. When the

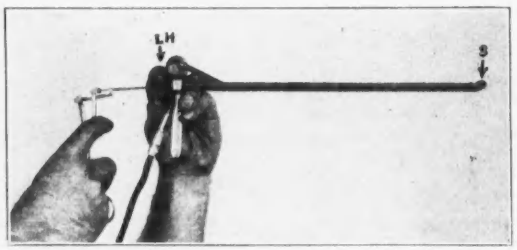

Fig. 11.—Technique of foreign body removal. (So that photograph might be clearer, gloves were not used.) The watermelon seed (S) is too large to be withdrawn through the bronchoscope. The seed has been grasped with forceps and pulled to the tip of the bronchoscope. The right hand maintains the forceps grasp on the foreign body. Note the position of the left hand (L H) holding the forceps and bronchoscope fixed together so as to permit the withdrawal of the seed, bronchoscope, and forceps by a single maneuver. The foreign body must be so turned during its extraction that its long axis is in the anteroposterior plane while passing through the glottic chink. This precaution will prevent the vocal cords from dislodging the foreign body from the forceps and at the same time will prevent trauma to the laryngeal structures.

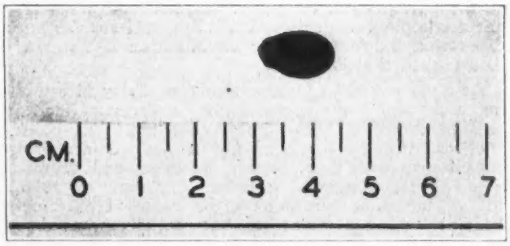

Fig. 12.—Watermelon seed removed from right main bronchus.

sharp end of the foreign body is pointing upward, occasionally the lumen of the bronchoscope can be slipped down over this exposed point so as to ensheathe it. The sheathed point then can be grasped and the foreign body safely withdrawn When a large object has three or more sharp edges (such as a tin toy) it may be impossible to cover all the points. It is advisable to remove such objects with round rotating forceps which allow the foreign body a certain amount of play and freedom of movement during the withdrawal. This minimizes the possibility of trauma. The usual anteroposterior rotation should be made for safe passage through the larynx, and a lateral rotation should be done to avoid injury to the pharynx.

Nails and tacks are sometimes wedged tightly into the bronchus with the head uppermost, so that no space remains between the foreign body and the bronchial wall for the insertion of the forceps. In such instances one must take advantage of the respiratory changes in the size of the bronchial lumen in order to remove the foreign body. Bronchoscopic examinations have shown that the bronchi elongate and widen with inspiration, but shorten and narrow on expiration. As these changes permit the object to be drawn deeper into the bronchus on inspiration and forced slightly upward on expiration, the grasping forceps are to be inserted and opened during the inspiratory phase and the foreign body is to be grasped during the expiratory phase. In cases of tight impaction this dislodgment must be done slowly and carefully.

Late Cases.—Secondary changes which occur from the prolonged stay of a foreign body usually will be much more marked in the case of organic objects (such as seeds and peanuts) than inorganic ones (nails, pins, and tacks) (Fig. 13). The reaction in the case of an organic foreign body is caused by the irritating decomposition products from these substances. These lead to an inflammatory edema of the bronchial mucous membrane which ultimately results in the formation of granulation tissue, bronchial occlusion, lung abscess, pulmonary gangrene, and bronchiectasis. Empyema, pyopneumothorax, or metastatic brain abscess may also follow. This sequence of unfavorable events is the result of delayed treatment.

Those patients in whom pulmonary suppuration has been present but a short time may expect a cure as soon as the foreign body is removed and adequate intrabronchial drainage is established. In others, several bronchoscopic treatments will be necessary even after removal of the foreign body (Fig. 14). The number and frequency of these latter bronchoscopic treatments are to be based on the persistence of symptoms, signs, and abnormal x-ray shadows. It has been our experience that lung suppurations of long standing do not clear up after simple bronchoscopic removal of the foreign body. In these patients chronic and permanent changes have taken place within the lung, and the treatment must be the same as that employed for other

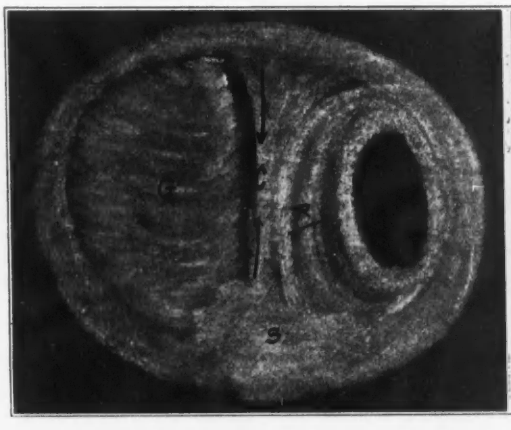

Fig. 13.—Bronchoscopic view. In a child who had aspirated a peanut nineteen days before examination. Severe secondary inflammatory changes have taken place. G—Succulent edematous granulation tissue occluding the entire left main bronchial opening. The diseased area was treated through the bronchoscope and the patency of the left main bronchus was reestablished. R—Right main bronchus. Note the bronchial rings and wide-open lumen on this side. C—Carina, bifurcation of the trachea. S—Secretion from the diseased area, collected at the base of the carina (C) on the floor of the trachea.

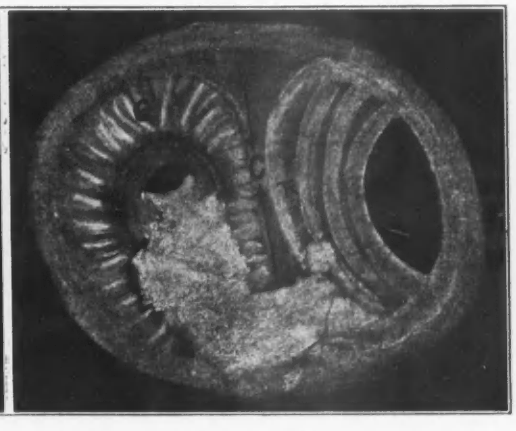

Fig. 14.—Bronchoscopic view. In the same patient as Fig. 13 four days later. G—Rim of granulation tissue encircling the left main bronchus. This bronchus is no longer completely occluded. Pus is seen pouring out of the left main bronchus, across the carina (C) and down into the right main bronchus (R). The pus was removed by bronchoscopic aspiration, and the left main bronchus was treated with 1:1000 adrenalin, 10 per cent cocain, and 4 per cent silver nitrate solution. This patient made a complete recovery.

chronic pulmonary suppurations: frequent bronchoscopies, postural drainage, artificial pneumothorax, phrenic nerve avulsion, and possibly open thoracic surgical procedures.

COMMENT

The serious complications which follow the aspiration of a foreign body are usually the result of delayed treatment and most likely could have been prevented by prompt bronchoscopic removal of the foreign body. Rapid strides have been made in recent years in the diagnosis and mechanical removal of foreign bodies from the trachea and bronchi, and in trained hands bronchoscopy has become a safe and an established procedure.

SUMMARY

1. The history of aspiration of a foreign body is too important to be overlooked even though other evidence of a foreign body is wanting.

2. The symptoms and signs in patients with intrabronchial foreign bodies are dependent on the positions of the foreign bodies and on the types of bronchial occlusion which follow.

3. Metallic foreign bodies are readily visualized on roentgenograms, but the x-ray diagnosis of nonopaque objects is made on the basis of obstructive emphysema or obstructive atelectasis.

4. Foreign bodies may be present within the bronchus even though the x-ray plates appear normal. Such patients require bronchoscopy for diagnosis as well as for treatment.

5. Intrabronchial foreign bodies should be removed immediately because delay may lead to the development of pulmonary abscess, bronchiectasis, or even to the death of the patient.

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DISCUSSION

Maurice Leopold Lubin, M. D. (University of California Hospital, San Francisco).—The diagnosis of foreign bodies in the tracheobronchial tree is missed occasionally because of the failure to recognize the possibility of the condition. It is surprising how frequently, in both children and adults, foreign bodies are found in the bronchi in the absence of a clear-cut history of aspiration. When confronted with such negative histories, we should always be more cautious in our examination of these patients. Often we have been called to examine a child with a previous diagnosis of spasmodic croup, diphtheria, pneumonia, or asthma, only to discover a foreign body in the respiratory tract.

The diagnosis is obviously more certain when the intrabronchial invader has produced a complete bronchial occlusion. The chest examination in such cases reveals either an obstructive atelectasis or an obstructive emphysema on the involved side. In addition, the heart and mediastinal structures usually are displaced. A displaced cardiac border is a valuable sign when present, but I feel that it is frequently overlooked because too much attention is focused upon the lungs during the examination.

Occasionally we meet with patients who have aspirated a nonopaque object such as a watermelon seed, cockle bur, peanut, or kernel of corn, and who have not a complete occlusion of a bronchus. It is in such cases that a bronchoscopic examination is necessary to establish the diagnosis.

As emphasized by Doctor Faulkner, delay in removing a foreign body occasionally converts an already serious condition into one having alarming consequences. When a foreign body has lodged in a bronchus for a month or longer, the organized granulation tissue and general inflammatory reaction at the site of the impaction makes the removal extremely difficult and hazardous. If a bronchus has been occluded in such a manner, a bronchostenosis may occur at the site of the occlusion and a bronchiectasis or pulmonary abscess may ensue. It is, therefore, of paramount importance that the foreign body be extracted as soon after its aspiration as possible.

My experiences confirm those of the writer as to the spilling of secretions from place to place within the tracheobronchial tree. This spilling and the areas affected by it are in most instances influenced by the posture of the patient.

*

Simon Jesberg, M. D. (500 South Lucas Avenue, Los Angeles).—Doctor Faulkner has lucidly presented his subject. The general plan outlined is practical and if faithfully followed a foreign body of the air passages could hardly be overlooked.

It cannot be too strongly emphasized that atypical respiratory symptoms are, too frequently, not considered as due to a foreign body; the diagnosis of pneumonia fully satisfying the doctor, as well as the records in the Bureau of Vital Statistics when the little patient is laid to rest still carrying his unsuspected foreign body. I am fully convinced that an incorrect diagnosis occurs many more times than we think and base that opinion upon numerous patients supposed to have pneumonia in whom a foreign body was located.

It is surprising the stubborn resistance of some pediatricians and others to consideration of the possibility of a foreign body unless a well established history of its entrance has been secured. On the other hand, having been given a history of a possible foreign body, reference of the case to the man who is the expert in such matters is not common and many futile efforts are made to remove a foreign body that does not exist. The solution of this problem would be simplified if a patient were brought to the bronchoscopist when the history or symptoms indicate the possibility of a foreign body. The details of diagnosis would be directed then in an expert manner and fewer mistakes would be made.

Diagnosis by x-ray rarely fails if properly used. However, many competent roentgenologists are not familiar with the detailed technique in this work and do not realize that nonopaque foreign bodies can be recognized and localized by the x-ray.

There is rarely great urgency to remove the foreign body. Time and calm consideration should be given to the diagnosis and equipment rather than to its hurried removal. The only immediately dangerous foreign body is one impinged in the larynx, or loose in the trachea and likely to become impinged in the larynx. If suffocation from such a foreign body is imminent a tracheotomy is indicated, after which the foreign body can be removed at leisure.

Obstructive atelectasis due to a foreign body is a comparatively rare occurrence. Obstructive emphysema or air-trapping is much more common.

Lung suppurations due to long retained foreign bodies in my experience have differed from those mentioned by Doctor Faulkner. Even after extensive lung suppuration and destruction, the process has cleared after removal of the foreign body. It is true that in some cases, bronchoscopic drainage and treatment of granulations has been required, but in most the symptoms cleared up spontaneously.

FLAGELLATE TRICHOMONAS HOMINIS IN THE RABBIT—ITS PATHOGENICITY*

REPORT OF AN INSTANCE OF INFESTATION IN MAN, WITH NECROPSY FINDINGS

REPORT OF CASE

By FRANKLIN R. NUZUM, M. D.
ALBERT H. ELLIOT, M. D.
AND
BLANCHE V. PRIEST, A. B.
Santa Barbara

DISCUSSION *by Herbert Gunn, M. D., San Francisco; John F. Kessel, M. D., Los Angeles.*

THE rôle of the intestinal parasite, *Trichomonas hominis,* in the etiology of disease in man is uncertain. As this flagellate is found in the stools of many apparently healthy persons, as well as of those complaining of a diversity of symptoms, a determination of its pathogenicity is important.

COMMENTS ON THE LITERATURE

Infestation by this parasite has been reported from many parts of the world. Although Kofoid,[1] as a result of his research in the Debarkation Hospital in New York City, believes that the eastern Mediterranean region is a source of infection, and that trichomonas is the least frequent of the common flagellates infesting man in other localities, the results of other observers tend to dispute this. In South America, Escomel[2] reported 152 instances observed during one year in Peru alone. Parodi[3] in the Argentine found more than fifty instances in the examination of 1071 persons. Wenyon and O'Connor,[4] examining English soldiers of the Egyptian Expeditionary Forces, reported twelve instances. In the temperate zone, Smithies[5] reported an incidence of two per cent infestation with *Trichomonas hominis* in 3780 persons; Kofoid,[6] an incidence of 1.1 per cent in approximately 8000 individuals. The highest figure of 22 per cent is given by Sistrunk[7] in a series of 145 patients. In the United States, instances of infestation with this flagellate have been reported from various sections. Freund[1] discusses ten instances found in Detroit in 1908. Lynch[8] mentions instances from South Carolina and Texas. Barrow[9] (Los Angeles) in 1924 found ninety-seven instances of trichomonas infestation in the examination of 725 persons. Sistrunk concluded that, contrary to the popular opinion, intestinal protozoa are not confined to the South, but are often found in the stools of persons who have never resided there.

SYMPTOMS

There is a difference of opinion regarding the symptomatology of trichomonas infestation. Some observers (Gunn[10] and Minchin[11]) express the belief that the affection is symptomless. However, weakness, lassitude, anemia, vague abdominal pains, flatulence, backache, insomnia, headache, etc., are frequently mentioned. The uncertainty attending this subject is best exemplified by the opinions expressed regarding the most frequently recorded symptom—diarrhea. That its occurrence is frequent is the belief of Chandler, Smithies,[12] Coutant, Hinkleman, Lynch, and Escomel.[13] Freund[1] reported ten patients from Dock's clinic suffering from chronic diarrhea with trichomonas present in the stools. He defends the pathogenicity of this flagellate, and the clinical entity of the disease, trichomoniasis. Head[14] has found numerous instances of diarrhea associated with trichomoniasis. Sistrunk[7] reported thirty-two instances of *Trichomonas hominis* infestation associated with diarrhea. Kofoid[15] also states that diarrhea may be caused by this organism. He believes, however, that the severe symptoms attending trichomonas infestation as reported by Alvarez (Columbia), Vacarezza (Argentina), and Escomel (Peru), might in reality be caused by Pentatrichomonas (an organism having one more flagella than the *Trichomonas hominis*).

There are others of the opinion that constipation is an important symptom. Bonthius[10] found that of seventy-four patients infested with one or more forms of intestinal protozoa, including *Trichomonas hominis,* seventy-one gave a history of constipation. Lopes,[16] quoting Loper, gives constipation as one of a group of symptoms in the "dyspeptic syndrome" of trichomonas infestation. Tsuchiya[17] found that in twenty patients carefully studied, diarrhea was not present. On the contrary, constipation was frequent.

PATHOGENICITY

Various attempts have been made clinically and experimentally to demonstrate the pathogenicity of *Trichomonas hominis.* Having gained access to the body, the organism inhabits the large bowel. Barrow[9] reports that hemorrhoids, abdominal tumors, intestinal adhesions, cecal pockets, diseased appendices and gall bladders, etc., may serve as incubators. It has been claimed that the flagellate can penetrate the intestinal walls, gaining access to the blood stream. Plimmer[18] has isolated it from the blood of batrachians and reptiles in the London Zoölogical Gardens. Pentimalli[19] obtained positive blood cultures from two patients; Hinkleman,[20] from one.

The opinions expressed and the evidence regarding the ability of trichomonas to invade the tissues of man may be summarized as follows: Chace and Tasker[21] and Haughwout[11] state that the organism never penetrates the intestinal wall. Musgrave,[22] Lopes,[16] and others believe that the organism can aggravate intestinal lesions already present. Coutant[13] encountered a large number of trichomonads in the microscopic examination of mucus obtained from an erosion in the rectum of a patient with trichomonas diarrhea. Soper[23] reports that in some instances of infestation small linear ulcers about the diameter of a hair abound in the rectal mucosa, as revealed by the proctoscope.

* From the laboratories of the Cottage Hospital, Santa Barbara.

* Read before the Pathology and Bacteriology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

We have found one report in the literature regarding the necropsy findings in an instance of trichomonas infestation. Our survey of the literature included the abstracting of fifty-two articles in four languages dealing with *Trichomonas hominis* or closely related organisms. Death in the above instance was due to aortic insufficiency and arteriosclerosis of the kidneys. There was a diffuse pseudomembranous colitis extending from the ileocecal valve to the rectum. Actual tissue invasion was not mentioned.[24]

Animal Experimentation.—Animal experimentation has failed to elucidate the question of pathogenicity. In some instances tissue invasion appears to have occurred, but since flagellates are often indigenous to the experimental animal used, the utmost caution is necessary in the interpretation of results. Stevenson, according to Haughwout,[11] obtained sections from the cecum of a mouse showing definite lesions of the mucosal surface invaded by numerous trichomonads. Hadley [25] found the trichomonas with which he worked penetrating the intestinal walls of a turkey. Many organisms were present in the crypts of Lieberkuhn, and from there had penetrated into the muscular layers. Since the relationship of the flagellates commonly present in mice and poultry to *Trichomonas hominis* is still undetermined, these observations are of doubtful value.

Animal inoculation experiments have been tried with various members of the flagellate group. The most important are those of Hogue,[26] who gave a series of kittens cultures of *Trichomonas hominis* orally and by rectal instillation. Stool examinations over a period of at least a week following the inoculations failed to disclose the organism. Negative results were also obtained with two rabbits, using the rectal route of implantation. In this instance a flagellate indigenous to the rabbit was found, but careful observation of morphology demonstrated that it was not the *Trichomonas hominis*.

We have attempted to prove the pathogenicity of *Trichomonas hominis* in experimental animals, to note any characteristic pathologic changes, and to recover the organism from the affected tissues. In our experiments eleven rabbits were used for inoculation, and twenty-four for controls. The material for inoculation was obtained from the freshly passed stools of a patient with a well-marked trichomonas infestation.

The first rabbit was given, by stomach tube, the supernatant fluid from a mixture of feces and 0.85 per cent salt solution. This contained numbers of active flagellates. On the fourth day the animal's stools appeared darker than those of the control group, but since flagellates could not be found, the dose was repeated in two weeks and again in four. At autopsy four days later, no organisms could be recovered.

In the next experiment, two feedings, a week apart, of fresh Trichomonas-containing feces and barley were given to two rabbits after a preliminary short starvation period. One month later the organism appeared in the stools of both. At postmortem examination, two and four months respectively after the original inoculation, *Trichomonas hominis* flaggellates were isolated from material obtained from the appendix and cecum of each animal.

Two other groups, of four rabbits each, were then treated in a similar way. The first group received two doses at a six-day interval; the second, a dose on the fifth and on the ninth day after the original inoculation. The stools soon became dark or mucus-coated, but the organism was not found. At autopsy, six weeks after the beginning of the experiment, *Trichomonas hominis* flagellates were isolated from the cecal material and appendix in each instance. In the second group the rabbit flaggellate was also found, confirming us in our opinion that we had been successfully differentiating between the two types of organism. Since the rabbit flagellate is often present, it might have proved a source of confusion.

Pathologic examination demonstrated the presence of numerous superficial ulcers, about one millimeter in diameter, limited entirely to the rectum, occurring twice in the experimental animals, and four times in the controls. The other organs were grossly normal. Microscopic examination of sections made from the large bowel, the appendix, and the gall bladder of each animal failed to disclose in a single instance tissue invasion by the flagellates.

REPORT OF CASE

We have observed one patient with a *Trichomonas hominis* infestation on whom we later made a necropsy examination.

J. G., a white boy, age two years and ten months, entered the Cottage Hospital on the service of Dr. Hilmar Koefod on November 5, 1920. He had spent a good part of his life in Texas. When sixteen months of age, he had had dysentery with blood and mucus in the stools, and a fever ranging between 101 and 103 degrees Fahrenheit for a period of two weeks. Eight months later he had fever and vomited for ten days, and since that time had been constipated and generally below par. On hospital entrance he complained of weakness, fever, and constipation. He appeared very pale and underweight. The heart was enlarged, and an apical systolic murmur was present. The spleen was palpable. The blood showed a pronounced secondary anemia, the hemoglobin being 40 per cent (Dare), and the erythrocytes numbering 1,630,000 per cubic millimeter. The leukocyte count was 3600 per cubic millimeter, of which the small lymphocytes composed 85 per cent, the neutrophilic polynuclears 8 per cent, the large lymphocytes 6 per cent, and the large mononuclears 1 per cent. The laboratory reported, on several examinations, the presence of *Trichomonas hominis* organisms in great numbers in the stools. His stay in the hospital was characterized by numerous periods of pyrexia, but he was at length discharged as improved on January 26, 1920.

He reëntered the hospital on March 20, 1920. At this time he was acutely ill, pallid, and lethargic. Pus was draining from each middle ear. The tonsils were infected, and the cervical lymph glands were enlarged. No further change was noted regarding the heart. The liver was down to the iliac crest on the right. The spleen was barely palpable. A few petechiae were scattered over the abdomen. The blood picture was essentially the same as previously, except for the presence of an occasional eosinophil (one per cent) in the stained smear. The urine contained a trace of albumin, but no casts or blood cells. *Trichomonas hominis* was again found in the stools.

The clinical diagnosis was septicemia, secondary anemia, chronic tonsillitis, otitis media, and *Trichomonas hominis* infestation. Death ensued on April 7, 1920.

Necropsy.—The anatomic diagnoses were petechial hemorrhages in the lungs, heart, stomach, small and

large bowel, urinary bladder, kidney pelves, and peritoneum; chronic parenchymatous nephritis; generalized cardiac enlargement and left ventricular hypertrophy; infected tonsils and hyperplastic cervical lymph glands; fatty change of the liver; and passive congestion of the spleen. Culture of the heart's blood and bile was positive for *B. coli*. Cultures of the pericardial fluid remained sterile.

The serous coat of the large bowel was covered with small areas of a brownish-pink color showing neither elevation nor erosion. These lesions differed in appearance from the petechiae in other organs, consequently it was felt that they might represent another pathologic picture, perhaps due to the presence of *Trichomonas hominis*.

Microscopic examination of the gall bladder and small bowel gave no evidence of tissue invasion of these organs by the flagellate. Microscopic sections cut through the lesions in the large bowel were also made. Dr. J. V. Barrow and Dr. A. Bonthius kindly consented to study them. They could not find that a single flagellate had penetrated into the bowel wall.

Evaluation of Findings.—In attempting to evaluate our experimental and pathologic findings, it must be remembered that we are considering a parasite and not a bacterium. Parasites commonly cause disease, not through cell invasion and toxin formation, as do bacteria, but rather through appropriating for their own use the energy income of the host, through opening the avenues to secondary bacterial invasion and through mechanical difficulties due to their presence in the tissues. Furthermore, the parasite may well be a secondary invader in its turn. In other words, the organism may have no pathogenicity in the true sense, and the symptoms resulting from nutritional disturbance may often be explained on another basis. Conversely, Koch's postulates cannot be applied with such aptness in attempting to prove that a parasite organism is invariably the cause of a certain disease, as they can with bacteria. Under such circumstances the best we can do is to demonstrate a constancy of relationship between the presence of a parasitic organism and a typical pathologic lesion.

In considering our rabbit experiments, we can say that we did obtain an infestation of the animals by *Trichomonas hominis*. Hogue, using a similar technique, as previously noted, was unsuccessful, and is of the opinion that most workers confuse the organism with which they work with that often indigenous to the animal used. By careful attention to morphologic detail we feel that we have eliminated this source of error. Granting, then, that our animals were "infected," we might hope to find a constancy of pathologic lesion, and to demonstrate the organism in that lesion. In this we were entirely unsuccessful. There was no evidence that the organism has the ability to invade the tissues of the rabbit.

Likewise, in our patient who had a heavy infestation, although we found lesions in the large bowel differing from those in other organs, we are not justified in concluding that *Trichomonas hominis* was the cause of those lesions.

CONCLUSIONS

We are forced to conclude from our experiments that *Trichomonas hominis* is not pathogenic in the rabbit. Careful study of our patient who came to necropsy warrants us in reporting the absence of any evidence of tissue invasion.

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DISCUSSION

Herbert Gunn, M. D. (2000 Van Ness Avenue, San Francisco).—There has been considerable interest during the past few years in the subject of flagellate infections, and *Trichomonas hominis* has come in for its share. The authors of this paper have considered the topic from a broad standpoint and have endeavored to throw light on it from various angles. Their observations constitute a valuable contribution to our knowledge of the subject.

Trichomonas hominis is recognized as being of world-wide distribution. There is some discussion as to the varieties of trichomonas based on the number of flagella that are found, but classifications changing the species have not been generally accepted. There has been considerable discussion for a number of years over the pathogenicity of this parasite. All sorts of symptoms have been ascribed to it, but much that has been written on the subject proves valueless upon critical consideration.

As stated by the authors, diarrhea is the most frequently recorded symptom. This is quite natural as the parasite is never seen in the formed stool, and as no cysts are produced its presence cannot be determined unless the stool is soft or liquid. The authors also quote several observers who state that in their experience constipation is the most prominent symptom. The fact of the matter is that the finding of *Trichomonas hominis* in the stool depends very largely on the character of stools examined. If the patients present symptoms of dysentery or diarrhea, trichom-

onas will be encountered in a certain percentage. If formed stools are examined it will not be encountered at all. If a laxative is administered to persons having a normal formed stool or suffering from constipation trichomonas will be found with probably as great frequency as in the diarrhea cases. For a number of years it has been my practice to examine in every case a warm liquid stool in addition to formed stools, and the results of these examinations has led me to conclude that the incidence of trichomonas infection has very little connection with any symptoms. I have also had the opportunity of observing a number of persons who harbored trichomonas for long periods after they had received treatment for various conditions, and in none of these were there symptoms which could be definitely ascribed to this parasite.

The findings of Doctor Nuzum and his colleagues in their animal inoculations and their autopsies would tend to strengthen my belief in the nonpathogenicity of *Trichomonas hominis.*

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JOHN F. KESSEL, M. D. (Los Angeles County General Hospital, Los Angeles).—The question of the pathogenicity of the intestinal flagellates is one about which considerable speculation has occurred in the past, but one concerning which very few exact experimental data have been procured. Most opinions that have been expressed thus far have been formed merely from clinical observations without adequate experimental studies in pathology in which the bacteriologic and protozoölogic aspects of the subject have been considered.

The present study is an attempt in the right direction, but the conclusions should not be taken as final. In the light of personal experience with this same general subject, I should like to make the following suggestions. First, the rabbit is an unfortunate animal for the authors to have selected for the present study on account of its restricted diet, and because its intestinal tract is often naturally infested with other flagellates, for example, *Chilomastix cuniculi* and *Eutrichomastix.* The authors mention the possibility of confusing *Trichomonas hominis* with these flagellates, and in their minds have successfully differentiated them from *Trichomonas hominis* of man. However, they have not given adequate description of the flagellates which they encountered, nor have they presented sufficient data concerning their methods of isolation and cultures of the protozoön, nor of the isolation and feeding methods employed with their experimental animals to convince the critical reader that they were not dealing with natural flagellate infestations of the rabbit. Experiments of this type to be of value must be carried on under strict isolation conditions and the food given must be sterilized. Such precautions should be taken in order to eliminate the possibility of experimental animals acquiring natural infections during the period of the experiment.

Second: In the review of the literature the authors fail to mention Wenyon's case in which he found invasion of trichomonas into the mucosa of the human intestine. They might also have referred to recent publications by the reviewer in which, first, *Trichomonas hominis* was found in conjunction with amebae in the pus from amebic liver abscess observed in Korea, and second, a series of experimental kittens in which both diphtheritic colitis and invasion of the flagellates into the intestinal mucosa were apparent.

Third: The case history presented by the authors was so complicated by other factors that it was a most unfortunate case to use in illustrating trichomonas infestation.

In order to study this subject adequately a further series of autopsy reports on patients found to be positive for *Trichomonas hominis* should be observed. Where positive pathology is present, protozoa other than trichomonas and pathogenic bacteria and fungi must be ruled out of the picture. Only when this is done, and when further careful experiments and clinical data are collected, will it be possible to answer the question raised by the writers.

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FRANKLIN R. NUZUM (Closing).—In answer to the questions raised by Doctor Kessel as to our experimental technique, we attempted to recognize, and eliminate so far as possible, sources of confusion and error. The animals were first carefully studied to determine the presence or absence of indigenous flagellates and their morphologic characteristics. During the experimental period the rabbits were isolated in single wire cages. They were fed steamrolled barley and dried alfalfa, which could not have been purveyors of Trichomonas organisms. They drank city tap water, which, on numerous examination of centrifuged specimens, was found not to contain flagellates.

For the identification of the organism, microscopic examination of normal saline smears of fresh intestinal contents proved the most satisfactory. In such preparations *Chilomastix cuniculi* is distinguished by a whirling disk movement, and three loosely spread flagellae trailing along one side of the organism in an almost parallel plane. Trichomonas, on the other hand, as aptly described by Davaine, "swings like the bob of a pendulum on its shaft," and an undulatory movement is apparent outside of the contour proper of the organism. Furthermore, trichomonas has a well-marked cystostome and axostyle which serve as another point of differentiation between it and chilomastix. In addition to fresh preparations, we studied the organisms as stained by iron-alum-hemotoxin, and by nigrosin. With the latter, the four anterior flagellae of *Trichomonas hominis* readily differentiate it from the three flagellated chilomastix. The organisms were not cultured.

We feel that the results of the experimental investigation of this problem, while not conclusive, are in confirmation of the clinical impression that *Trichomonas hominis,* at least in most instances, is nonpathogenic for man. Since, to the best of our knowledge, persons do not die of trichomonas infestation, autopsy material must of necessity be complicated by other factors. Nevertheless the careful study of such material offers the best approach to the final solution of the question.

ACNE*

A STATISTICAL STUDY OF POSSIBLE RELATED CAUSES

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DISCUSSION *by Ernest Dwight Chipman, M. D., San Francisco; Norman N. Epstein, M. D., San Francisco; Stanley O. Chambers, M. D., Los Angeles.*

GILCHRIST in 1902 found the *Bacillus acne* in pure culture in many lesions of acne and present in all lesions. Since that time it has been generally recognized that the *Bacillus acne* is the primary cause of acne vulgaris; however, it has been many times stated that there are a number of predisposing factors or causes contributing to the presence of acne lesions, such as improper food, constipation, abnormal menstruation in women, endocrine disturbance, and foci of infection.

* Read before the Dermatology and Syphilology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

TABLE 1.—*The Distribution of Acne in the Age Groups 15 to 24 and 25 to 34 Years.*

	Face		Chest		Back		
Age Group	No.	Per Cent	No.	Per Cent	No.	Per Cent	Total
15 to 24 years	1117	10.0	1334	12.0	2085	18.8	11104
25 to 34 years	120	8.4	123	8.6	213	14.9	1426
15 to 34 years	1237	9.8	1457	11.6	2298	18.3	12530

MATERIAL FOR THIS STUDY

Since the literature contains few available statistics either in support of, or contrary to such impressions, a careful study of several thousand cases of acne might prove valuable in disposing of, or in supporting these opinions. The material for this study was taken from the records of the physical examinations of young women entering the University of California at Berkeley. At first 12,530 such records were utilized. Of these, 2974, or 23.7 per cent, were of students who had acne. The handling of the remainder, 9556, as controls proved too laborious, so 3185 patients without acne were selected to serve as comparison with the 2974 patients with acne.

25 to 34 year age group (Table 1). The differences in the percentages vary from 1.6 per cent for acne of the face to 3.9 per cent for acne of the back.

The number of young women having acne of the back is greater than the number having acne of the chest; and this in turn is greater than the number having acne of the face (Table 1).

To be able to make a judgment of the effect of nutrition on the incidence of acne, the individuals studied were classified according to their weight deviations from the standards of the insurance actuarial tables (Table 2). There are approximately the same percentages of those with, and those without, acne in corresponding weight variation groups. The state of nutrition as expressed by weight variation seems to have no influence on the development of acne.

TABLE 2.—*Comparative Weight Correction of the Acne Present and Acne Not Present Groups.*

	Acne Present		Acne Not Present	
Weight Correction	No.	Per Cent	No.	Per Cent
−40 to −59 pounds	3	.1	4	.01
−20 to −39 pounds	247	9.4	301	10.0
0 to −19 pounds	1347	51.5	1485	49.5
No weight correction	86	3.3	133	4.4
0 to +19 pounds	747	28.6	834	27.8
+20 to +39 pounds	123	4.7	182	6.1
+40 to +59 pounds	47	1.8	39	1.3
+60 pounds and over	14	.5	16	.41
Total	2614	98.7	2994	99.9

CLASSIFICATIONS IN THIS STUDY

The group of those with acne was classified from the standpoints of: (1) age; (2) incidence of the lesions on the back, chest, and face; (3) weight correction; (4) complexion; (5) menstrual history; (6) history of related conditions, such as constipation, headache, boils, colds, appendicitis, and tonsillitis; (7) conditions of the thyroid gland; (8) conditions of the nose; (9) conditions of the tonsils; and (10) conditions of the eyes.

Age is a factor in acne frequency, since the characteristic skin lesions are more frequently found in the 15 to 24 year age group than in the

Complexion does not seem to be a very influential factor in the incidence of acne (Table 3). The differences in percentages are too small to have statistical value, but suggest that distinct blonds and brunettes have slightly better chances of escaping acne than do demiblonds.

The relation of acne to the menstrual history is of special interest (Table 4). The duration of flow has no relation to the presence or absence of acne in the cases studied. There seems to be no relationship between the age of onset of men-

TABLE 3.—*The Numbers and Percentages of Those with Various Complexions With and Without Acne.*

	Acne Present		Acne Not Present	
Complexion	No.	Per Cent	No.	Per Cent
Blond	495	17.3	1796	19.3
Demiblond	1468	51.4	4471	48.1
Brunette	886	31.1	3033	32.6
Total	2849	99.8	9300	100.0

TABLE 4.—*Comparisons of the Menstrual Histories of Young Women With and Without Acne.*

	Acne Present		Acne Not Present	
Days of Duration	No.	Per Cent	No.	Per Cent
1 to 2 (inclusive)	29	0.6	58	1.1
3 to 5 (inclusive)	2098	75.9	2400	76.6
6 to 9 (inclusive)	644	23.1	691	22.8
Total	2771	99.6	3149	100.5
Age of Appearance				
10 to 12	728	26.7	848	26.9
13 to 15	1923	69.5	2143	68.1
16 to 19	115	4.1	152	4.7
Total	2766	100.3	3143	99.7
History of Pain				
No pain	1599	55.4	1625	53.4
Slight pain	806	27.9	839	27.6
Severe pain	478	16.5	576	18.9
Total	2883	99.8	3040	99.9
Character of Menstruation				
Never menstruated	2	.....	2	.....
Irregular	418	14.4	437	14.3
Scanty	119	4.1	137	4.4
Profuse	212	7.3	224	7.3
Normal	2526	88.5	2695	88.1
Total	2857	99.9	3056	99.8

struation and the presence of acne at the time of the examination. Unfortunately, we have no figures correlating the onset of acne with the onset of the menses, or the prevalence of acne during various phases of the menstrual cycle. There seems to be no reciprocal dependence between the character of the menstrual period and the incidence of acne. Those with, and those without acne, have approximately equal chances of freedom from dysmenorrhea, irregularity, and scanty or profuse menstruation.

When students enter the University, a fairly extensive history is taken. From this the conditions which might be factors in the development of acne have been segregated and listed (Table 5). The striking fact brought out by this table is, that those with and without acne have had almost identical histories of constipation, appendicitis (with and without operation), headache, tuberculosis, and tonsillitis. Those without acne have slightly better chances of escaping boils, but slightly greater chances of having frequent colds than those with acne. Differences in percentages throughout this table are, however, so small as to be without great reliability.

In the condition of the thyroid gland is found the first real indication of a factor influencing the development of acne (Table 6). A young girl with a normal thyroid has better chances of a clear skin than one with slight thyroid enlargement or other thyroid abnormality.

The possible influence of foci of infection on the amount of acne present may well be looked for in relations between nasal and throat conditions and acne incidence (Table 7). The arguments in favor of a causal relationship find some support in the fact that of those without acne, 68.6 per cent have normal noses, whereas of those with acne, only 66.1 per cent have normal noses; a difference of 2.5 per cent. The influence of the tonsil as a focus of infection is suggested, since pathological tonsils are found in 21 per cent of those without acne, and in 23.8 per cent of those with acne; a difference of 2.8 per cent.

Eye conditions, as expressed in the type of refraction error, are not correlated with the presence or absence of acne (Table 7).

COMMENT

Our object in this study has been to let the figures speak for themselves. The headings under which the comparisons are made were not designed for the purpose of the study, but were fixed by the nature of the examination required

TABLE 5.—*Comparisons of the Histories of Groups of Young Women With and Without Acne.*

	Acne Present		Acne Not Present	
	No.	Per Cent	No.	Per Cent
Boils	236	7.8	216	6.8
Constipation	286	9.6	298	9.4
Appendicitis, no operation	135	4.5	159	5.0
Appendicitis, with operation	217	7.3	238	7.5
Headache	385	12.9	441	13.9
Tuberculosis	29	.9	24	.7
Colds	162	5.4	205	6.4
Tonsillitis	846	28.4	926	29.2
Cervical adenitis (gland)	684	24.0	722	22.8
Total	2974		3170	

TABLE 6.—*Thyroid Condition of Young Women With and Without Acne.*

Condition of Thyroid	Acne Present		Acne Not Present	
	No.	Per Cent	No.	Per Cent
Normal	1968	70.6	2371	75.0
Enlarged (adolescent)	758	27.2	690	21.8
Miscellaneous	60	2.0	101	3.1
Total	2786		3161	

at entrance to the university. Had the material available permitted a study of acne cases as associated with seborrheic dermatitis, pelvic pathology other than as expressed in menstrual disorders, dietary habits, and foci of infection in teeth and sinuses, we feel that this study might have presented more positive findings.

The most outstanding impression received from a study of the available material is the striking similarity in the percentages of the findings in the two groups—those with and those without acne. That such conditions as extreme weight deviations, abnormal menstrual periods, dysfunction of the lower intestinal tract as expressed in the history of constipation, and of appendicitis have no influence on the appearance of acne seems surprising. On the other hand, the greater percentages of the abnormalities of the nose and of the tonsils in the patients with acne demand a more careful statistical study of the influence of foci of infection on the development of acne.

The attitude of those who pay particular attention to the condition of the thyroid gland in patients with acne vulgaris is given support from this study.

The usual textbook statement that the predominance of acne lesions occur on the face, is not substantiated by this study.

CONCLUSIONS

The following conclusions may be drawn from a study of the statistics used as the basis of this paper:

1. Acne lesions are found more frequently on the backs of young women than on their chests, and more frequently on their chests than on their faces.

2. More young women in the 15 to 24 year age group have acne than in the 25 to 34 year age group.

3. Nutrition, as expressed in weight deviation from a selected standard, is not a determining factor in acne incidence.

4. Complexion is without significant influence on the amount of acne present.

5. There is no relationship between the presence or absence of acne in the 15 to 34 year age group and such menstrual characteristics as age of beginning, duration, irregularity in interval, amount of pain, and amount of flow.

6. The history of boils, of constipation, appendicitis, and tonsillitis has no appreciable bearing on the incidence of acne.

7. Foci of infection in the nose and throat may favor the development of acne.

8. Thyroid enlargements are associated with a slight increase in acne incidence.

TABLE 7.—*Comparison of the Conditions of the Nose, Tonsils, and Eyes of Young Women With and Without Acne.*

Condition of Nose	Acne Present		Acne Not Present	
	No.	Per Cent	No.	Per Cent
Normal	1846	66.1	2187	68.6
Spur	221	7.9	268	8.4
Deviated septum	679	24.3	682	21.4
Chronic rhinitis	102	3.6	122	3.8
Total	2793		3185	
Condition of Tonsils				
Remnants	80	2.9	75	2.3
Normal	997	35.6	1095	34.4
Absent	798	28.5	1117	35.0
Buried	347	12.4	304	9.5
Projecting	45	1.6	38	1.2
Pathological	666	23.8	674	21.0
Total	2793		3185	
Condition of Eyes				
Vision normal	1482	53.2	1711	53.9
Far sighted	638	22.9	737	23.2
Near sighted	526	18.8	566	17.8
Astigmatism	509	18.2	526	16.5
Muscular difficulty	4	.....	1	.....
Total	2793		3185	

9. If we accept the theory that acne is due to an infection, this study would indicate that the infection is little influenced by systemic conditions.

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DISCUSSION

ERNEST DWIGHT CHIPMAN, M. D. (350 Post Street, San Francisco).—This excellent statistical presentation should do much to clear the atmosphere which has so persistently obscured the question of acne. One is reminded of the young man who left the home farm and wandered for many years in a vain hunt for fortune, only to find it in his own back yard when he returned. We in medicine, likewise, often go too far afield in search for that which lies near at hand.

The authors seem to assume that the acne bacillus is the exciting cause of acne and concern themselves with a consideration of possible contributing factors. Now the acne bacillus has never been proved to be the cause of acne, but fortunately, so far as treatment is concerned, its presence, wether causal or casual, does not appear to make any difference.

Reduced to lowest terms the situation seems to me about as follows. First of all, we are dealing with an adolescent with an oily skin. It is quite possible that endocrine influences have a bearing upon the oiliness, but no matter what causes it the excessive production or deficient distribution of oil is always the basis of a juvenile acne. It is, perhaps, quite rational to regard a certain degree of oiliness as a physiologic concomitant of adolescence and to look upon an excess as possibly pathologic.

Our problem is to facilitate the distribution or to lower the production rate of oil, since the retention of oil is the cause of the comedone and the comedone is the essential element of acne. We can help the distribution by the use of keratolytics and by thorough washings with soap and water. We can diminish the production rate of oil with x-rays.

In my observation both the original comedone formation and the secondary infection are often due to dirt. The average adolescent boy, from no matter what social sphere, is entirely undependable in the matter of ablutions, while the average adolescent female is much more handy with the compact than the cake of soap.

I cannot escape the feeling that, had the authors included a table separating those who use soap freely from those who do not, they would have had a positive finding. At any rate this paper should be of great service in keeping etiologic fortune hunters in their own yards.

❋

NORMAN N. EPSTEIN, M. D. (Four Fifty Sutter Building, San Francisco).—There is little that one can add to the clear-cut statistical report concerning acne vulgaris among the young women attending the University of California, presented by the authors. They have had an excellent opportunity to compare the findings in a large group suffering with acne as compared with a large number who were free of acne lesions.

The striking similarity between the findings of the normal group and the group with acne is outstanding. In no single instance could it be definitely stated that some underlying constitutional disease predisposed to acne. From this, one cannot draw the conclusion that the general health is not important in the production of acne. Many patients have a definite history of exacerbation of their condition at the time of the menstrual period or when they are constipated or after overindulgence in candies and pastries. However, it is true that local treatment frequently is sufficient to completely eradicate the condition.

Acne vulgaris is one of the most common conditions which we have to treat. Although satisfactory results are obtained in the large majority of instances by our present methods of treatment, many cases are very troublesome. Any work such as this which increases our knowledge of the disease is certainly very much worth while.

❋

STANLEY O. CHAMBERS, M. D. (1260 Roosevelt Building, Los Angeles).—That the authors have effectively grasped an investigative opportunity is evident in this inclusive statistical review of acne vulgaris.

It is true that a few workers believe the acne bacillus to be the actual cause of the disease. The majority, however, do not accept this view, and it will require much more evidence before such proof is forthcoming. The association between the development of the acne lesion and the endocrine system, so frequently observed by the authors, to my mind stands as the real investigative approach to the disease. We thoroughly understand the pathologic mechanism by which the lesions develop, but we fail in the explanation of that which initiates this abnormal function.

Thyroid dysfunction is sufficiently concrete in its association with the disease to appear outstanding in such a statistical review. If the entire endocrine system was equally accessible to investigative study, we might better understand this basic mechanism.

It is such comprehensive reviews as presented by these authors that stimulate further study and help strengthen our theoretical conceptions.

SENSITIZATION IN SINUS DISEASE*

By SAMUEL H. HURWITZ, M. D.
San Francisco

DISCUSSION *by William Palmer Lucas, M. D., San Francisco; J. A. Bacher, M. D., San Francisco.*

RHINOLOGISTS agree that inflammatory affections of the nasal sinuses are in most instances bacterial in origin. Although the normal nasal chambers contain bacteria at all times, a healthy membrane can withstand invasion until some influence affects its powers of defense or lowers the general resistance of the body.

CAUSES OF SINUS DISEASE

There are a number of local causes which predispose to infection of the sinuses. Those most commonly mentioned by rhinologists are congenital or acquired nasal anomalies, foci of infection in the tonsils and teeth, and foreign bodies. Another very important cause of sinus disease is sensitization of the nasal mucous membranes to protein substances. This predisposing influence, although not infrequently mentioned of late in rhinologic literature, has not gained sufficiently the wide recognition to make it a factor in the management of these patients.

The air continually drawn through the nostrils contains not only bacteria, but the nasal mucous membrane provides contact by inhalation with substances in the form of dust. By far, the largest group of dust substances occurs with definite seasonal relation and is made up of various pollens. When the symptoms are perennial the cause may be in the form of air-borne substances, as dust, animal emanations, and vegetable powders, such as orris root, and wheat flour. Dusts play a very important part in causing nasal allergic reactions. House dust is composed princi-

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pally of particles of lint from cotton, materials from linen and wool used in floor coverings, bedding and clothing and many other substances such as glue from furniture, dander and hair of pet animals and bits of down or feathers from upholstering or pillows. Similarly occupational dusts contain the substances characteristic of the shop or factory from which they were obtained: bakery dust is chiefly wheat or rye flour; furrier's dust contains many fur particles and dye substances; and jeweler's dust contains a large percentage of box wood.

Although Eyermann [1] and other recent observers have shown that hypersensitive individuals may have nasal allergic reactions from the ingestion of foods to which they are sensitive, it is at present generally conceded that inhalants play by far the greatest rôle as sensitizing agents. Some years ago, Cooke,[2] whose experience with human sensitization is large, pointed out that in his series of over three hundred patients studied, about 70 per cent were due to substances that are conveyed in the form of dust and that act after absorption by the mucous membranes of the respiratory tract.

PREDISPOSITION TO SENSITIZATION

The number of individuals who have a predisposition to become sensitized is large. It has been estimated that from seven to ten per cent of the population of the United States, or approximately from seven to ten million persons, suffer from some allergic disease. Of these some one or two million have hay fever. Whereas it is possible that perfectly normal individuals may, by sufficiently long contact, occupational or otherwise, with powerful sensitizing substances of various kinds, acquire some form of nasal allergy, recent clinical studies have stressed the importance of hereditary predisposition in the development of nasal and other forms of allergic manifestations. Our present knowledge of this inherited tendency does not permit of a definite explanation for the development of this sensitivity more readily in certain individuals than in others. It is believed that the body cells of persons with an inherited predisposition possess this characteristic just as certain individuals inherit eyes and hair of a certain color. The fundamental inheritance transmitted from parents to offspring is not this or that particular form of sensitization, but the allergic constitution. It is difficult in the present state of our knowledge to define in terms of biologic changes in what way an individual with an allergic constitution differs from a normal person. Some of the characteristics of the allergic state which have been stressed by various students of this subject are hyperexcitability of the sympathetic nervous system and increased permeability of the skin and mucous membranes. This increased vulnerability of the skin and mucous membranes may offer an explanation for the readiness with which certain individuals become sensitized to allergic substances, which produce little or no effect upon the normal person.

THE RÔLE OF INFECTION AND SENSITIZATION IN SINUS DISEASE

It has long been recognized by rhinologists that infection of the maxillary, and more particularly of the ethmosphenoid group of sinuses, may give rise to a train of symptoms resembling hay fever. In these patients the nasal discharge may be watery at first, but sooner or later becomes mucopurulent or purulent. This change in the nature of the nasal discharge may be the first indication that the infection of the sinus membranes is primary and not grafted on an allergic condition. The development of the conception that a similar train of symptoms may be the result of a secondary infection of the nasal and sinus mucous membranes, showing allergic manifestations is quite new. It is of historical interest that Todd [3] was among the first to emphasize this causal relationship between nasal allergy and chronic sinus infection in a paper entitled "Ethmoiditis as a Common Sequel (Never the Cause) of Pollinosis (Hay Fever)." Of this relationship he writes: "During each attack of hay fever, swelling of the turbinates takes place, causing defective drainage; secretion occurs, infection is added thereto and we have present during pollinosis, ethmoiditis and sometimes pansinusitis. The recovery of the sinusitis usually occurs when the pollen ceases to circulate in the air, but repeated attacks of pollinosis may result in a persistent lesion and thus the patient may develop chronic ethmoiditis, sphenoiditis, frontal sinusitis or pansinusitis, often accompanied by persistent swelling of the turbinates, and especially the middle turbinate."

During the eighteen years since the publication of Todd's paper considerable controversy has arisen between allergists and rhinologists in regard to the relative importance of infection and sensitization in the etiology of chronic sinus disease. Whereas many rhinologists accept the view of Todd that the nasal allergic state may be the primary cause of sinus infection, there are other excellent observers, among them Coates,[4] who are equally strong in the conviction that infection in many instances is the primary cause of obstruction to sinus drainage and that the allergic state, if it can be shown to exist, may be readily established in the presence of congested and irritable mucous membranes, so common in patients with paranasal sinus disease.

The majority of rhinologists today recognize the importance of both infection and allergy in the etiology of sinus disease. They classify disease of the sinuses into suppurative, hyperplastic, and a mixed group in which the allergic form is placed. Support for this viewpoint is to be obtained both from clinical observation and histopathologic studies of tissues removed from local lesions. Anyone who has observed many patients with some form of nasal allergy must have been impressed with the large incidence of sinus infection among them. This is particularly true of those showing symptoms throughout the year. In them the chronic edema of the nasal mucous membranes soon leads to hyperplasia of the soft tissues—especially around the middle turbinate—

and thickening of the mucosa about the ostia sufficient to narrow the normal opening. Impairment in drainage soon results in chronic sinus infection. The incidence of sinus disease secondary to nasal allergy would appear to be considerable. Of five hundred hay fever patients studied by Duke,[5] 27 per cent of the perennial cases and six per cent of the seasonal cases, a total of 33 per cent, showed definite evidence of chronic nasal sinus infection. During the past three years we have studied a fairly large number of hay fever patients, both seasonal and nonseasonal, in the asthma and allergy clinic of Stanford Medical School, and whereas no accurate statistical data are as yet available, a conservative estimate of the occurrence of some grade of sinus disease among these patients would be about 50 per cent. These patients were studied with the coöperation of a member of the rhinological staff assigned by the department to make these examinations, which included all the usual methods of study, roentgen rays, and, in many instances, a cytological examination of the aspirated secretion.

Further support for the recognition of allergic sinus disease as a clinical entity comes from the histopathologic studies of Hansel.[6] In the tissues removed from the nose and sinuses of patients manifesting the clinical symptoms of nasal allergy uncomplicated by secondary infection, this observer found definite histopathologic changes: in the epithelium, thickening, hyperplasia, and polypoid degeneration; in the submucosa, eosinophilic infiltration, edema, and varying numbers of mononuclear, lymphocytic and connective tissue cells. The glands of the submucosa were found compressed and atrophic and the blood vessels dilated, thickened and compressed. In the bone there was evidence of a hyperplastic and atrophic change.

With the advent of secondary infection, Hansel found the microscopic picture modified by the appearance of varying degrees of infiltration with polymorphonuclear leukocytes, lymphocytes, plasma cells and round cells. This increased infiltration of the epithelium and submucosa with polymorphonuclear and other cells may greatly obscure the prominence of the eosinophil. Following long-continued infection, infiltration with connective tissue occurs, a histologic picture which is indistinguishable from that of true primary sinus suppuration. In the stage of fibrosis it may be difficult to distinguish, pathologically, instances of primary sinus suppuration in which bacteria are the causative agents from allergic sinus disease complicated by secondary infection, unless it is possible to find, histologically, areas of edema and hyperplasia without infiltrative changes. Such telltale areas are usually to be found. If corroborative studies confirm Hansel's contention that allergic sinus disease gives rise to a distinct histopathologic picture, we shall have another valuable way of differentiating this form, even when complicated by secondary infection from primary suppurative disease of the sinuses.

DIAGNOSIS OF SINUS DISEASE OF ALLERGIC ORIGIN

The data required for a diagnosis of allergic sinus disease are the same as those essential for the recognition of allergic manifestations in the nose. For purposes of clearness, these may be considered under the headings of clinical history, rhinoscopic examination, eosinophilia in the nasal secretions, and cutaneous tests.

History.—There is no disease group in which a detailed history is more essential, and there are few histories more difficult for the uninitiated to obtain. It is necessary to go into every ramification of the patient's life, activities, and surroundings. The family history must be searched for the presence of manifestations of hypersensitiveness in antecedents, for a positive family history occurs in 60 per cent of clinically hypersensitive patients, whereas it is present in only seven per cent of the general population.[7] Hence the presence of seasonal or perennial hay fever or other allergic manifestations in the parents, grandparents, uncles, or aunts always suggests the probability that the presenting nasal symptoms are allergic.

The diagnosis of seasonal hay fever is usually not difficult if, in addition to an allergic history, the patient has seasonal attacks attended by coryza, lachrymation, itching of the eyes and nose, sneezing and nasal obstruction. When, however, the same condition occurs as a perennial disease, the diagnosis is frequently mistaken for an infective type of coryza, and many surgical procedures may be undertaken in an effort to give the patient relief.

Rhinoscopic Examination.—The appearance of the nasal mucosa in patients showing allergic nasal reactions has been well described by Coates [4] and more recently by Hansel.[6] These observers emphasize the bilateral character of the pathologic changes and the variations in the appearance, depending upon the severity and frequency of the attacks and the duration of the disease. In the early cases the mucous membrane is pinkish gray in color, and so markedly edematous and boggy that nasal breathing is completely obstructed. In patients having typical seasonal hay fever, the symptoms do not last long enough to produce permanent changes in the mucous membrane. In consequence, during the inactive stage, the nasal membrane, except for discoloration, may appear normal. Patients with symptoms throughout the year, however, show striking pathologic changes in the mucous membranes. Due to the generalized hyperplasia of the epithelium the membrane takes on a pale gray color. This change has been noted more especially over the anterior tips and lower margins of the middle turbinates and in the anterior ethmoidal regions. The hyperplasia of the epithelium and the edema of the submucosa over a long period of time give rise to the polypoid degeneration so frequently noted in these conditions. The mucous membranes of the eth-

moid and maxillary sinuses may show pathologic changes similar to those observed in the nasal membranes.

Eosinophilia in the Nasal Secretions.—The eosinophilic reaction is generally recognized as an important phenomenon of allergy. A blood eosinophilia is not an uncommon although by no means an invariable finding in these patients. In a recent study of three hundred and forty-six patients, Brown [8] found an average of seven per cent eosinophils in the blood of patients with perennial hay fever due to protein sensitization. In addition to their increase in the blood, eosinophils occur in large numbers in the tissues, sputum, and nasal secretions of allergic patients. Eosinophilic infiltration has been found postmortem in the bronchial walls and, as has already been pointed out, it is a characteristic of the submucosal tissues removed from the nose and sinuses of patients manifesting allergic symptoms. Recently Eyermann [9] called attention to the diagnostic significance of an eosinophilia in the nasal secretions. He regards it as one of the most striking features of nasal allergy, just as an eosinophilia is an outstanding characteristic of the bronchial secretions in allergic asthma. In a study of the nasal secretions of ninety-one patients with various conditions of the nose, Eyermann found eosinophils present in 72 per cent of those showing nasal allergic reactions as compared with only nine per cent in the nonallergic group. This finding is in keeping with the histopathologic studies already presented. A cytologic examination of the nasal secretions for eosinophilia may, therefore, serve as another diagnostic aid in the differentiation of obscure instances of nasal allergy from other nasal conditions.

Cutaneous Tests.—Much has been written in recent years concerning the dependability of skin tests in the diagnosis of allergic diseases. Whereas such tests are only one link in the diagnostic chain, one must nevertheless regard them as indispensable, more particularly in the study of the patient with seasonal or perennial hay fever. In these patients skin tests are a very reliable guide as to causative protein inhalants responsible for the nasal symptoms, and fortunately in this group the percentage of positive tests obtained is very high. It is therefore important for the physician who expects to study many patients with nasal allergy to have in his possession suitable preparations of practically all the substances that are known to sensitize the nasal membranes. He must be willing to spend the time and he must have the patience to test and retest his cases because frequently many and repeated tests are required before the cause or causes underlying a given instance of nasal allergy are successfully determined.

Skin tests are particularly reliable in the diagnosis of allergic manifestations in children, and in them the cause of nasal and sinus symptoms may frequently be determined by this method of study. Because of the tendency to overlook protein sensitization as a possible cause of chronic sinus disease in children, the suggestion has been made that the allergic factor be assumed until it has been definitely excluded.[10]

Too much, however, must not be expected from the skin test. It has definite limitations in diagnosis. There is an impression, far too common, that if the reactivity of the skin indicates the presence of an allergic condition, failure to obtain a positive reaction rules out the existence of protein hypersensitiveness. This is a conception far from the truth and one that has led to much discredit of the skin test as a diagnostic procedure. A reliable history, an expert rhinologic examination, and clinical tests must still constitute the basic data for an etiologic diagnosis of nasal allergy.

THE TREATMENT OF ALLERGIC SINUS DISEASE

The best results in the prevention and treatment of nasal sinus disease of allergic origin can be achieved only by the close coöperation of the rhinologist and the internist devoting his time to the study of allergic diseases. The proper therapeutic course to pursue in each patient depends largely upon the degree to which nasal allergic symptoms are complicated by nasal lesions and infection. Judging from recent rhinologic literature, it would appear that most rhinologists agree that uncomplicated seasonal and perennial hay fever are nonsurgical conditions. Coates [4] has summarized in a concise way the therapeutic problem in this group of allergic patients: "In no case where protein sensitization can be demonstrated should dependence be placed on nasal surgery. Where this is done, good results will rarely be obtained, and for this reason surgery for such cases falls into disrepute. Allergic treatment should first be instituted and carried out."

The results of desensitization in this group of allergic patients vary somewhat with the methods of treatment employed by different workers. That the results of the specific therapy of hay fever are gradually improving would appear from almost every recent paper on this subject. An excellent summary of the present status of the hay fever problem has been published by Feinberg.[11] Vander Veer, Cooke, and Spain,[12] Bernton [13] and Piness [14] report some degree of symptomatic relief in from 75 to 94 per cent of all hay fever patients. Walker,[15] a pioneer worker in this field, has recently analyzed a series of one hundred of "apparently cured" hay fever patients. He defines the word "cure" as freedom from symptoms for two or more years without treatment, the average duration of specific therapy having been three and a half years. It is doubtful whether it is justifiable to apply the term "cure" to an ailment in which hereditary predisposition plays so important a part. Certain it is, however, that improvement in methods of treatment and the elimination of other causes of failure will increase the number of instances of more complete and lasting relief.

An important therapeutic advance is the growing tendency to supplement the preseasonal and

coseasonal treatment of the hay fever patient with desensitization throughout the year. In our hands, perennial treatment promises to give the most permanent relief. The method employed by us is briefly the following: Patients who are multiply sensitive to the spring or fall pollens are treated simultaneously with two or more extracts, the dose of each extract being given separately in different sites in the arm. Before the pollinating season, the dose may be increased quite rapidly at biweekly intervals; during the season the frequency of injections is increased to triweekly intervals, but the dosage is kept below an amount likely to cause a strong local or a constitutional reaction. Between seasons the dose of extract is again increased to as high a point as possible, and this dosage may be continued at fortnightly intervals throughout the year. In instances of perennial hay fever resulting from multiple sensitization to pollen and other biologically unrelated allergens, treatment is carried out at the same time both with pollen extracts and those made of the other protein offenders. Desensitization with animal epidermal extracts and various miscellaneous substances, such as orris root, silk, cotton and other components of environmental dusts, is undertaken only if it is clear that elimination therapy alone will be ineffective.

The frequent association of nasal allergic manifestations with nasal anomalies and infection has already been stressed. To obtain the best results in these patients, a combination of desensitization and local surgical measures may be essential. This aspect of the subject has been discussed in previous papers.[16,17] Regardless of whether a nasal anomaly or a focus in the nose or sinus is directly secondary to the allergic manifestations or is coincidental, if drainage is interfered with, good judgment demands its correction. Many rhinologists report good results, particularly in the perennial hay fever patient, following appropriate local surgical measures. If the faulty mechanical condition of the nose is the result of obstruction from a turgescent, allergic mucous membrane, local shrinkage of the membrane frequently gives immediate relief while awaiting the more permanent relief from specific treatment. In the event proper ventilation and drainage of the nose still continues defective after a course of desensitization, corrective surgical measures are justifiable. It is at times difficult when allergy and nasal anomalies and infections are all present to decide which form of treatment to employ first. The proper therapeutic sequence can only be determined by a study of the individual patient.

Finally it should be emphasized that no therapeutic regimen in patients with chronic sinus disease is complete unless it includes those general measures which are likely to improve the vitality and resistance of the respiratory mucous membranes. Those agents which seem to give the greatest promise in this direction are a vitamin-containing diet, cod-liver oil, sunshine and calcium therapy.

The exact mechanism underlying desensitization of a hypersensitive patient is little understood. It may be assumed that in some way the permeability of the cells lining the mucous membranes of the body is lessened, so that they no longer react unfavorably to certain protein substances, contact with which had heretofore given rise to an allergic reaction. That this inherited vulnerability and irritability of the mucous membranes in allergic patients may also be modified by the general measures mentioned appears very likely. The value of diets rich in vitamin A as an aid to improvement in the resistance of the sinus membranes to infection is supported by some good experimental work. In 1923, Daniels and her co-workers [18] showed that a diet deficient in fat soluble vitamin A, found abundantly in butter fat and cod-liver oil, may predispose to the development of sinus infection in the experimental animal. Barlow also noted [19] that a diet in which Vitamin A is deficient gives rise in animals to marked changes in the mucosa of the respiratory tract, edema and small cell infiltration, resulting in rhinitis, sneezing, and wheezing—symptoms all of which suggest an allergic nasal reaction. Although similar studies on the influence of nutrition on the allergic responses in man are not available, it is reasonable to infer that an allergic mucous membrane may be rendered less reactive by a diet rich in vitamin A.

To a diet rich in vitamins, and more particularly in vitamin A, sunshine, natural or artificial, cod-liver oil and calcium are important adjuvants. The employment of calcium in patients with allergic manifestations has been considered valuable by some and useless by others. Because of its antagonistic action to sodium and potassium, calcium has the property of diminishing neurocellular hyperexcitability and of decreasing the permeability of cell membranes. This difference of opinion as regards the therapeutic value of calcium may have resulted from a failure to insure its absorption in adequate amounts. Recent studies show that calcium absorption is influenced by the acid-base values of the diet, the amount of fat, the addition of cod-liver oil (vitamin D) and the amount of exposure to ultra-violet light.

According to the work of Kahn and Roe,[20] the optimum oral dose of calcium lactate is five grams, taken on an empty stomach. This dose is to be taken twice daily, about one-half hour before breakfast and dinner. Children are given about one-half of this amount three times a day before meals.

In the prevention of allergic nasal reactions the general therapeutic measures discussed should prove to be even of greater value since clinical experience has shown that many patients with an allergic constitution may remain symptom-free for many years, even though exposed to substances to which their mucous membranes are sensitive, until the allergic balance is upset by undernutrition, fatigue, or infection. Any measures, therefore, undertaken to increase the vitality of the respiratory mucous membranes in these patients should help to lessen the incidence of chronic nasal sinus disease among them.

SUMMARY AND CONCLUSIONS

1. The mucous membranes of the nose and sinuses are constantly exposed to sensitization with numerous air-borne sensitizing substances. The existence of an inherited predisposition to develop sensitization in over half of the population has made the incidence of allergic manifestations of the nose and sinuses very large.

2. Sensitization of the nasal mucous membranes is a very important predisposing cause in the development of chronic nasal sinus disease. The recognition of sinus disease of allergic origin is based upon clinical and histopathologic evidence.

3. The diagnosis of allergic sinus disease can be made from the clinical history, rhinoscopic examination, demonstration of eosinophilia in the nasal secretions and cutaneous tests.

4. The successful treatment of allergic sinus disease depends upon the success which attends the treatment of the nasal allergic manifestations. Instances of nasal allergy complicated by secondary infection may require local surgical measures. In these patients the best results are achieved by the coöperation of the rhinologist and allergist.

5. Every available general measure which helps to improve the vitality of the respiratory mucous membrane and to lessen cellular permeability should be employed in the prevention and treatment of sinus disease of allergic origin. These should include a high vitamin-containing diet, cod-liver oil, sunshine, and calcium.

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DISCUSSION

WILLIAM PALMER LUCAS, M. D. (490 Post Street, San Francisco).—Doctor Hurwitz' paper interests me very much from the standpoint of an allergic condition associated with sinus infection. There is no question but that the two conditions have an intimate relationship with each other. It is often difficult to say which one is the predominating factor. To give good results, one must treat the individual from an allergic standpoint and also from the standpoint of a sinus infection. We have found that internal glandular derangement conditions are also closely associated with sinus infection. We have quite a large series of cases in which repeated sinus infections are not successfully handled until their metabolic condition is corrected. In some of these cases this may be due to a hypothyroid condition or a hyperthyroid condition. The important point is that the individual must be studied from every point of view where there is a chronic sinus infection.

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J. A. BACHER, M. D. (Stanford University Hospital San Francisco).—Doctor Hurwitz has been very fair as to the relative importance of infection and of allergic factors in sinus disease. There are two causes of discharge from the nose. First: sinus infection, acute or chronic. In the chronic case sometimes no discharge is present except after very careful study. Second: mechanical, chemical or allergic irritation. Polypi are nearly always caused by purulent discharge which irritates the mucous membrane and leads to its hypertrophy. Polypi may rarely be caused by mechanical or chemical irritation. It is questionable whether the edema that may accompany an allergic state can cause polypi without the factor of discharge. Hirsch reported a case of polypi springing from the antrum in a case that he had known for years, to be atrophic rhinitis. Upon opening the antrum, a polyp was found springing from its posterior-inferior wall, with a small pedicle passing through the antral ostium, the body of the polyp hanging over the inferior turbinate. Hirsch does not believe that a purulent condition is necessary for polyp formation. He thinks that a small edematous mass of mucosa in a catarrhal sinusitis becomes incarcerated in the ostium, pinched off in the middle meatus and forms a polyp. Hirsch states that a third of forty-two cases of polypi showed only catarrhal inflammation. Catarrhal inflammation as used by Hirsch presumes discharge, watery in its presenting characteristics. I have always felt that polypi meant purulent sinusitis. When a patient has discharge from the nose and it is watery in character and contains a few mononuclear leukocytes and has an allergic history, we may have a sinusitis—that is, allergic irritation of the sinus lining associated with discharge into and from the sinus. Then there is the case where there is scanty, watery discharge, with negative x-ray and negative allergic history and findings. It is then probable that the discharge comes from a sinus, and most difficult to tell whether or not there is an allergic factor. It remains to be seen whether allergic therapy can cure cases of sinusitis with frank pus and polypi. I think Doctor Hurwitz has given a fair outline of the treatment of such cases.

TUBERCULOSIS OF THE TRACHEO-BRONCHIAL GLANDS*

By Joseph C. Savage, M. D.
Los Angeles

Discussion *by Lloyd B. Dickey, M. D., San Francisco; Carl R. Howson, M. D., Los Angeles.*

THE proper diagnosis of tuberculosis of the tracheobronchial glands is of the utmost importance to the infected child, for hilum tuberculosis not adequately treated may become active at any time and needlessly infect other children with whom it comes in contact. The trend of emphasis in modern pediatrics is to preserve health, rather than restore it. It should be no longer necessary to stress the important fact that tuberculous infection has its inception during infancy and increases in incidence as age advances.

ETIOLOGY

Tuberculosis of infancy and childhood is far more prevalent than ordinarily supposed; for chronic tuberculosis of early life is essentially a lymph node process. The Ghon tubercle or primary infection is easily overlooked and the spread of the infection to the neighboring lymph node presents a matter for conjecture as to whether it will remain dormant in that node and become calcified, or flare up under the strain of repeated infections and increased economic strain and produce a generalized tuberculous infection.

The importance of familial contagion has long been recognized, but even in this advanced age, a contact case, that is, the child in seeming good health, but in intimate contact with one suffering from active pulmonary tuberculosis, is often overlooked. This child may develop an immunity to tuberculosis, it is true, but in the vast majority of cases the onset of miliary tuberculosis or tuberculous meningitis is more often the rule.

DIAGNOSIS

The diagnosis of tuberculous involvement of the tracheobronchial glands should not be based solely upon a positive tuberculin reaction or indefinite clinical and roentgenologic signs when the members or the immediate family are healthy, but, on the other hand, close contact with tuberculous parents or others, even with the child in seeming good health, should put us on our guard. Stoloff [1] considers only two means of any value in the diagnosis of this condition, roentgenologic examinations and tuberculin reaction.

As to the relative value of the Pirquet and Mantoux tests, in 3112 children tested by Smith,[2] 7.8 per cent gave a positive von Pirquet, while 16.5 per cent were positive to the intradermal test.

Armand, De Lille,[3] Bronfin,[4] and other observers are of the opinion that the D'Espine sign, together with interscapular dullness, have proved of little value in the diagnosis of this condition. They rely for the most part upon properly taken and interpreted roentgenograms, taken in the anteroposterior and straight lateral positions. Roentgenograms taken in the oblique position are not satisfactory, as a confusing shadow is obtained by the ramifications of the pulmonary artery and bronchi. It can be said, therefore, that as a general rule, tuberculosis of infants without tracheobronchial adenopathy does not occur.

CLINICAL SIGNS

Among 816 tuberculous children at the Sanatorium of Belzig, W. Freymuth [5] found pulmonary lesions in but 10 per cent, whereas 90 per cent had glandular lesions, these figures being based on clinical signs. Holt, in reporting 119 autopsies of tuberculous children, found tracheobronchial gland lesions in 96 per cent, and Hamburger and Sluka of Vienna reported pulmonary lesions in 50 per cent and tracheobronchial involvement in 96 per cent in 160 autopsies.

The glandular disturbance may assume different forms, according to the glands chiefly involved. These glands, as Gueneau, de Mussy, and Barety have shown, are divided into four large groups:

1. The right pre-tracheobronchial, or right juxta-tracheal group, in the angle formed by the trachea and the right bronchus, in relation anteriorly with the right pneumogastric; on the right with the superior lobe of the right lung; on the left with the trachea below the right and left branches of the pulmonary artery; above with the subclavian artery and recurrent laryngeal nerve. This is the most important group.

2. The left pre-tracheobronchial, or left juxta-tracheal glands, are in relation above with the aorta and recurrent laryngeal nerve and with the root of the left lung below.

3. The inter-tracheobronchial group, underneath the bifurcation of the trachea, immediately below the pulmonary veins; and posterior to the esophagus, the aorta, and the azygos vein.

4. The peribronchial groups, formed by the extremely numerous and, for the most part, very small glands (lymphatic follicles) which accompany the bronchi and their ramifications throughout the mass of lung substance.

In interpreting roentgenograms in children, a knowledge other than that of the adult chest is essential. The National Tuberculosis Association [6] has expressed itself as follows:

"Interpretation of films should be made by an experienced physician who is familiar not only with chest films in general, but with films of children's lungs in particular. He should also have a clinical background, and the interpretation should not be independent of careful consideration of history, symptoms and physical examination."

* Read before the Pediatrics Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

One of the first great difficulties in the diagnosis of disease of the chest is to have a clear understanding of what is normal. A special commission, appointed by the National Tuberculosis Association to study this problem, reported: "To one observer, shadows noted are indicative of disease; to another they are not evidences of a pathologic process; to one they represent lesions of clinical significance; to another they suggest changes of no moment." The lungs of 171 children coming to necropsy were studied to determine what pathologic changes were present to account for the shadows seen in the roentgenograms of the chest.

It is impossible to formulate any definite normal standard from a roentgenographic standpoint. Interpretation of the x-ray pictures should go hand in hand with the history, clinical and physical observations, and laboratory data. The hilar shadows and linear markings are made up, for the most part, of the blood in the blood vessels and not of the bronchi. The rounded shadows of even density which occur in the inner third of the lung fields, as well as those found along the linear markings, are due to blood vessels running parallel to the axial ray.

Normal lymph nodes do not cast shadows. Hyperplastic lymph nodes, whether caseated or inflammatory, whether in the hilum or in the intrapulmonary tissue, cannot be recognized as such if they do not contain calcium. They do not cast shadows unless they are large enough to encroach on the pulmonary fields from the mediastinum or the hilum, or unless they are visible by contrast in the air-bearing pulmonary parenchyma.

The size and shape of the hilar shadow is influenced not only by active infection, but also by the remains of previous infections. This shadow may show wide variations in different roentgenograms and yet be within normal limits for the person examined.

SYMPTOMS

The symptoms are often overlooked by the average parent, and are often attributed to factors such as overwork in school, growing, and too much activity.

Bronfin [4] in a recent article analyzed the cases at the National Jewish Sanatorium. Three hundred patients were admitted during a period of six years. The average age was nine and one-half years. The principal complaints on admission were: underweight, 31 per cent; underweight with fatigue, 11.6 per cent; underweight, fatigue, and irritability, 6 per cent; frequent colds and fever, 13.3 per cent; cough, 6.6 per cent; capricious appetite, 10 per cent; periodic swelling of glands of neck, spinal deformities, and unclassified, 6 to 7 per cent. The cases were further divided into tonsillectomized and nontonsillectomized children, little difference being noted, except in the chronic respiratory conditions. On the basis of exposure, the children were divided thus: contact cases, 51 per cent; probable contact, 21 per cent; and nonexposed cases, 31 per cent. Forty-eight per cent of all cases with periodic rises in temperature of 100 degrees Fahrenheit or over, with or without symptoms, occurred in the exposure cases; 9 per cent in probable exposure; and 11 per cent in negative exposure cases. Irritability and cough was twice as prevalent in exposure patients as in other classes; while underweight was 96 per cent in exposure and only 4 per cent and 30 per cent in probable and nonexposed patients. The number tested for the tuberculin reaction was small. Of such, 95 per cent of the exposure patients gave a positive reaction, while 70 per cent and 53 per cent in the probable and negative exposure. These numbers would be of greater significance had the intradermal test been used, rather than the classical von Pirquet.

Roentgenographic examinations were also made in Bronfin's series of cases, and the interpretations, made independent of clinical symptoms, clearly illustrate the importance of roentgenography as a diagnostic aid. In 155 cases of definite exposure, 8.3 per cent were normal. Enlarged hilums were present in 78 per cent; calcified hilums in 75 per cent; tracheobronchial tuberculous in 81.8 per cent; primary foci in 74 per cent; and tuberculosis in 79 per cent. In ninety-three probable exposure cases, 16.7 per cent were normal; 15.4 per cent enlarged hilums; 19 per cent had calcification at the hilum; 13.6 per cent had tracheobronchial tuberculosis; 25.7 per cent had primary foci; and 17.8 per cent had tuberculosis. But in fifty-two negative exposure patients 75 per cent were normal; 6.6 per cent had enlarged hilums; 5.1 per cent showed calcification at the hilum; 4.6 per cent had tracheobronchial tuberculosis, with no primary foci being demonstrated.

The symptoms of tracheobronchial glandular tuberculosis are usually those of a mild disturbance of nutrition. The child does not seem as well as usual, tires easily, is irritable and cross. He does not get on as well at school as children of his own age. His appetite is poor and there is failure to gain in weight. There is more or less pallor and the temperature shows a daily rise. There is usually no cough and no sweats. Cough if present is usually dry, nonproductive and pertussis-like in character, due to pressure of glands on recurrent laryngeal nerve.

The physical signs are indefinite and often misleading. Bronfin is in accord with Armand, DeLille, and others, in the value of D'Espine sign and interscapular dullness. Faulty posture was observed in a very small number, while positive symptoms were no greater in the long, slender, asthenic types of chest, than in those of normal chests. They agree with Bernard that the pretuberculous child does not exist. The only evidence of value is the intradermal tuberculin reaction, and roentgenologic investigation.

CONCLUSIONS

The diagnosis of tuberculosis of the tracheobronchial glands is not based solely upon physical signs. Properly taken and carefully interpreted roentgenograms, intradermal tuberculin tests, and a careful history as to exposure to tuberculosis are the main essentials in the diagnosis of this condition.

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DISCUSSION

Lloyd B. Dickey, M. D. (Stanford University School of Medicine, San Francisco).—Doctor Savage has brought up a very important subject in pediatric practice. We could emphasize this importance if we were able to quote the incidence of hilum node, or tracheobronchial tuberculosis, among children who are examined. As this diagnosis must in most cases be presumptive, we could approach determining the true incidence only by exhausting every possible resource for a diagnosis. Among the aids we have are: the history of the patient, with especial reference to exposure; the physical examination, which rarely helps; the roentgenographic and tuberculin studies, which are very important; and a period of observation. In our clinic at Stanford, where we used these aids in all cases before diagnosing tracheobronchial tuberculosis, we presumed that about 4.3 per cent of all our children had this condition in an active form. In about 7.2 per cent there was evidence pointing to a previously healed infection of this type. Possibly these figures approach the true incidence insofar as figures may in presumptive diagnoses.

The differential diagnosis is a very important phase of the question. The National Tuberculosis Association is distributing a booklet by Chadwick and McPhedran entitled "Childhood Type of Tuberculosis—Diagnostic Aids." This contains much valuable information. On page seven appears the following sentence: "The diseases that sometimes simulate the childhood type of tuberculosis are bronchopneumonia, bronchiectasis, pulmonary abscess, Hodgkin's disease, enlarged thymus, neoplasms, and mediastinal abscess." In our experience all of these, except the first two, are relatively uncommon as compared with tuberculosis. I think we are safe in saying that in our community by far the commonest condition simulating childhood tuberculosis is chronic infection of the accessory paranasal sinuses and the associated chronic bronchitis which usually accompanies it. This may not be true in Philadelphia or other communities near the eastern seaboard.

From the beginning of mankind's study of tuberculosis, we have known much more about the end results of the disease than about its initial stages. It is only fairly recently that we have known much about the beginning of infection, and there are still many facts to be known before the story of the pathogenesis of tuberculosis is completed. Every study made of childhood tuberculosis may add to our knowledge, and these studies should be encouraged in every community.

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Carl R. Howson, M. D. (711 Merritt Building, Los Angeles).—Doctor Savage's paper has to do with a subject concerning which there is perhaps as great need of enlightenment as in any department of medicine.

The importance of having in mind always the danger to the child in contact with a case of open tuberculosis in the home is coming to be increasingly stressed as we study such groups. In McPhedran's studies the frequency of tuberculous infection among contact children was three times that of non-contact children.

As a rule physical findings certainly help us very little in the recognition of these enlarged nodes, but a careful physical examination is none the less important, and frequently gives vital information concerning other or complicating pulmonary conditions.

A modification of the Pirquet test which adds considerably to its value is the addition of O. T. B., which can be applied on the lowest of the three scarifications, in place of O. T. H. In a small but appreciable proportion of cases a reaction is obtained to this preparation, but not to O. T. H. In many cases reactions can be obtained by the intracutaneous test of Mantoux after failure to react to the cutaneous test. My personal preference in such cases is for the intracutaneous administration of 0.1 milligram of O. T. This is, of course, too large a dose to use initially, but I have never seen unduly severe reactions if the cutaneous test was first applied and found negative. The fact that allergy is depressed and tests may be negative during or immediately following acute illnesses, such as influenza, measles, etc., should be borne in mind. Marked malnutrition or anemia may have the same effect.

The x-ray is of value in the few cases where the glandular enlargements are of such magnitude that they project out into the lung field. By means of oblique or lateral views it shows also the lesions in which calcification has taken place, but this is obviously a late stage and, while some of these may still be active, the vast majority are old. Their importance in regard to the future of the child must be kept in mind, but the great need is recognition of the infection during its active stage. Fibrous changes are undoubtedly responsible for much of the change in density, and here again the question arises as to their significance with regard to present activity. It follows, therefore, that in the great majority of cases we are unable to demonstrate the local pathology.

However, given a history of contact, with symptoms of toxemia and a definitely positive tuberculin test, the diagnosis is clear, even in the presence of complicating conditions which may contribute to the symptomatology. The absence of such a history should not lead us to overlook the significance of the symptoms and the tuberculin reaction, though more conservatism is necessary.

In the treatment of the condition, the children need rarely be confined to bed, but can be very successfully cared for in open-air school rooms, without loss of grades.

The importance of diagnosis lies in our ability to build up these children by adequate rest, proper medication, etc., and to see that they are protected from overstrain during the trying period of puberty, when more serious tuberculous lesions are liable to develop. It is our hope that by such recognition, care and guidance, we shall materially lessen the incidence of adult tuberculosis, which still ranks first as a cause of disability and death during the early adult years.

OUTSTANDING PROBLEMS FOR PEDIATRICIANS*

By DONALD K. WOODS, M. D.
San Diego

IT was suggested last year by many of the members that this section dispense with an address by the chairman. I cannot refrain, however, at this time from bringing a few of our outstanding problems before you. It is not my object to propose solutions of these problems or even make suggestions toward their solution, but merely to keep these matters fresh in the minds of all pediatricians.

I do not feel that the specialty of pediatrics needs justification for its existence. There is, however, an expressed and implied doubt existing in the minds of other medical men whether pediatrics is an entity and particularly whether it deserves a place in our state society as a separate section. This uncertainty, as in many other cases, is due to a lack of understanding of the peculiar problems involved.

The infant and the young child are anatomically and physiologically profoundly different from the adult. Each has the same systems and in a manner the same functions, but the child is greatly affected by growth and development and thereby rendered unstable. And most important, the child is partly or wholly lacking in resistance to infection.

If the pediatrist were to justify his existence on no other ground than that of prevention by proper instruction and care of some of the chronic conditions and diseases, he would have served his purpose well. Many of these chronic infirmities begin in childhood and may be arrested or cured during this period.

In the pediatrists' field alone today probably lies the opportunity for the solution of the greater number of the present problems of medicine and surgery. Recent special attention to the respiratory, and particularly upper respiratory tract, is illuminating and indicates the need for our participation. Sinus disease in childhood is only too slowly being recognized as an entity. With this and the frequently resultant secondary infection in the chest, there is a challenge to our resources second not even to the challenge of juvenile tuberculosis.

I believe it is but a short time until we shall see considerable specialization within the so-called specialty of pediatrics. I feel that we have particularly neglected the upper respiratory tract which, as we all know, is one of the chief sources of childhood difficulties. We pediatricians have a general knowledge of this field and we frequently call, in consultation, nose and throat men to help us in the more technical cases of sinus and middle ear infection. But we frequently find lack of interest and experience where a child is concerned. I therefore believe it is worth while for us to think seriously of men who will specialize almost entirely, if not entirely, upon the upper respiratory tract or the ear, nose, and throat in children. I feel that in the field of sinus infection alone we have the source of a great many of our present problems and I think we must all admit we know little about this particular area. Arthritis, endocarditis, general malnutrition, general lowered resistance, and constantly recurring upper respiratory infections are probably in a great majority of cases due to low-grade sinus infections which in the past have rarely been diagnosed or even been considered. In the same manner I believe the entire field of pediatrics should be covered and opportunities for more thorough and specialized consideration of our problems should be pointed out.

One other major problem, the business of medicine or medical economics, particularly concerns pediatricians. I believe that every section of the state society and also every county society should make a more definite study of the business of medicine. I feel that the program of every section each year should have at least one paper with discussion upon this subject. It is only by such coördination of efforts that we shall be able to produce results and have a proper understanding of our economic problems. As we all know, there is a growing flare for social medicine and multiplication of clinics. Much of this work develops among, and devolves upon, the pediatric group in any community. I feel that under the guidance of our county organizations and sections of the state society we should carry on careful surveys to definitely determine how much time pediatricians are to spend with their own private work and how much shall be given the community and enthusiastic lay workers.

Finally I believe it is not out of place to merely mention, in connection with the business of medicine, that it is becoming constantly more necessary for all physicians to pay more careful attention to accounting within their own offices. I think the failure of the physician in the past to put his office on a business basis has been one of the chief sources of much careless medical practice, and also one of the chief causes of the present widespread dissatisfaction with the cost of medical care. We have educated the people and community to be paupers and recipients of gratuitous medical services regardless of their status. Scientific men rather shudder at the mention of such gross matters as finances, but the time has come, or rather has been with us for a considerable period, when we need to give more careful consideration to these subjects. There is no more reason why physicians should give millions of dollars' worth of services to the state and county each year than that lawyers, real estate men, or grocers should give the same service. May we always, however, as in the past, be charitable where there is need. Nevertheless, we must be firm in our demand that we be given a voice in deciding where that need exists and when and by whom our time and skill shall be dispensed.

2545 Fourth Street.

*Chairman's address, Pediatric Section of the California Medical Association at the sixtieth annual session at San Francisco, April 27-30, 1931.

STONES IN SINGLE KIDNEYS—THEIR MANAGEMENT*

REPORT OF CASES

By JAMES R. DILLON, M. D.
AND
JENNER G. JONES, M. D.
San Francisco

DISCUSSION *by Robert V. Day, M. D., Los Angeles; C. J. Negley, M. D., Los Angeles.*

IT is with a high degree of confidence and unconcern that we advise and urge the most radical surgical procedures upon a diseased kidney when we know its opposite fellow is normal. On the contrary, when a patient has a single kidney, whether due to a congenital absence, disease, or to the surgical removal of its fellow, any impairment excites as much apprehension as a lesion of the heart, brain, or any other single vital organ. That this apprehension is more or less general, and that single kidneys are attacked only as a last resort, is illustrated by a statement by Keyes in a report on six cases, in which he operated on four of the patients for anuria, and one for persistent pain. All his patients stood the operation as well as patients with two kidneys.

Walters of the Mayo Clinic reports forty-three cases of single kidney and ureter operations with a mortality rate of 14 per cent. The cause of death in all patients was due to sepsis and uremia, and he urged an early operation for removal of stone before renal insufficiency and infection developed to such extent as to greatly increase the operative risk. Keyes stressed three points in his operative technique: first, the kidneys were handled gently; second, the pyelotomy incision was left unsutured; third, the kidneys were decapsulated. These precautions were taken in the hope of minimizing the postoperative renal congestion. There were a few other articles reporting one or two cases of operations on single kidneys, mostly for calculus anuria, or for resection of the solitary double kidney types.

* From the Division of Urology, Stanford Medical School.

* Read before the Urology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

COMMENT ON REPORT OF CASES

This presentation is based on the report of four cases, three of which were true solitary kidneys, due to nephrectomies of the opposite kidneys, and one case of uremia from bilateral nephrolithiasis, with one completely obstructed and functionless kidney, and the other containing a large stag-horn stone completely filling the pelvis and calyces.

The particular point in the operative technique was gentleness, as stressed by Keyes, but rather, by *not* handling than by handling the kidneys. In order to accomplish this, ribs were removed where necessary, to facilitate the approach to the posterior surface of the kidney, pelvis, and ureter, without stripping the kidney of any more of the perirenal fat than necessary.

In the first case (Fig. 1), the pelvis was of the extrarenal type and the stone small, so that only the lower half of the posterior surface of the kidney, the pelvis and upper end of the ureter were exposed and the stone was easily removed through a simple pyelotomy.

The next case (Fig. 2) presented greater difficulties of approach. A rib was removed, and only the lower pole, lower half of the posterior surface, ureter and pelvis exposed. The pelvis in this case was the intrarenal type. The upper end of the ureter was opened and the incision carried to the renal parenchyma. A small stone was easily removed, but the large one which filled the lower dilated calyx and protruded by a smaller nodule into the pelvis, could not be dislodged. The incision in the pelvis was sufficient to allow the little finger to be pushed against the stone bulging the cortex, where a curved clamp was thrust through the cortex into the calyx and spread gently. The stone, one by two centimeters in size, was grasped by stone forceps and by traction, assisted by the finger in the pelvis, and was removed by a partial nephrolithotomy, which was closed by a single mattress suture with damage to not more than a cubic centimeter of renal tissue.

Fig. 1 (Case 1).—Kidney and ureteral stones in solitary kidney and ureter.

Fig. 2 (Case 2).—Stones in solitary right kidney.

The third case (Fig. 3) of single kidney came in with an anuria of over

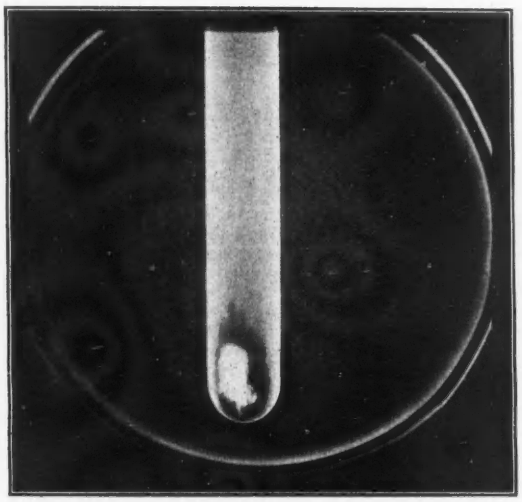

Fig. 3 (Case 3).—Large ureteral stone in tube and beaker of urine, which did not cast an x-ray shadow in patient.

twenty-four hours. The x-ray examination was negative, no stones showing. The ureteral catheter was stopped at about twenty centimeters. Exposure at this point delivered a large ureteral stone, which cast a dense shadow in all media (Fig. 3) and under all conditions after removal.

The fourth case (Fig. 4) came in uremic and septic, with a greatly diminished output of urine, due to bilateral nephrolithiasis mentioned above. His blood urea before operation was 102 milligrams per 100 cubic centimeters. In this case a rib was resected and the kidney, ureter, and large extrarenal pelvis were exposed. The pelvis was incised, and the bridge of stone filling the pelvis between the upper and lower calyces was broken away with clamp and rongeur forceps and removed in pieces. A clamp was held under the ureter at the lower end of the incision to prevent particles from dropping down the ureter toward the bladder. The ends of the stone filling the kidney poles were grasped with forceps, and after a little difficult manipulation were removed (Fig. 6). The pelvis was then thoroughly irrigated with salt solution to remove small particles, and the pelvis palpated (Fig. 5). The blood urea rose to 198 milligrams, postoperative, then slowly diminished to a level of 40 to 50 milligrams, which is still maintained.

Incisions into pelves and ureters were approximated by interrupted fine catgut sutures in all cases, and suitable drainage installed. Fluids were not immediately pressed for fear of increasing congestion, only 500 to 700 cubic centimeters of salt solution daily being given under the skin for the first two days, until a free urine output was established, and then fluids were forced. The recoveries were all fairly uneventful.

REPORT OF CASES

Case 1.—O. M. Hospital No. 182247. Age, twenty-eight; unoccupied; white; male. Six years before coming under observation the patient was in an automobile accident; fractured spine in three places, fractured pelvis, ribs and skull. Patient had laminectomy following injury. He had urinary and fecal incontinence for three to four months following injury. A retention catheter was in place during this time. The urine became very foul. Some gravel was passed following removal of catheter. In 1926 patient had a lithotrity. Two years ago a left perirenal abscess was drained, and two months later the remainder of the left kidney was removed. Patient entered Lane Hospital on November 26, 1928, complaining of pain in the bladder and rectum, incontinence, and paralysis of legs below knees. Urine was very dirty, many red blood cells present; blood urea, 22.5 milligrams. Phthalein 50 per cent, two hours. Cystoscopic examination showed two bladder calculi three by two centimeters and one by two centimeters in size. X-ray showed a right renal calculus in the lower pole of the kidney and a small ureteral calculus three by four millimeters at the brim of the pelvis. Blood normal. On December 5, 1928, lithotrity was attempted, but the calculi were too hard to be crushed, so lithotomy was performed. Postoperative course uneventful. The patient's urinary symptoms were much improved following this. On December 21, 1928, patient was able to hold urine two to three hours, where he had been more or less incontinent before the operation. On December 24, 1928, phthalein was 40 per cent. On January 14, 1929, the ureteral calculus was removed through a right inguinal incision. Postoperative course uneventful. On January 24, 1929, blood urea

Fig. 4 (Case 4).—Large stag-horn stone removed through pyelotomy incision.

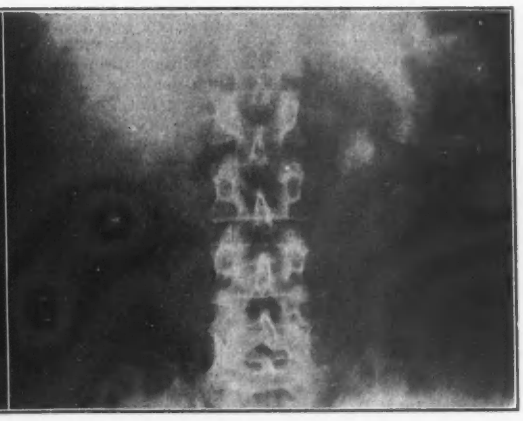

Fig. 5 (Case 4).—Four months after removal of stone from right kidney.

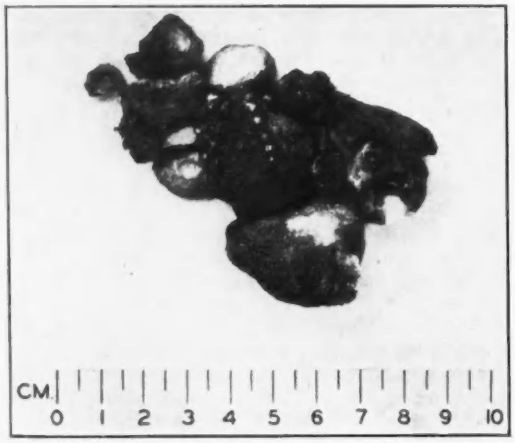

Fig. 6 (Case 4).—Stone after removal.

was 26.25 milligrams. On February 11, 1929, right pyelotomy was performed, a small calculus one by five centimeters was removed from the lower calyx. Patient recovered from this operation uneventfully. Following this a long course of physiotherapeutic measures were started. Patient left the hospital on June 10, 1929, markedly improved.

* * *

Case 2.—W. C. Hospital No. 178983. Age, thirty-eight; white; male. Salesman. Past history: Patient had gonorrhea in 1918. In 1920 a seminal vesiculectomy was performed at a Kansas City hospital which resulted in a recto-urethral fistula that did not heal, although several attempts were made to repair it. The patient enjoyed fairly good health in spite of a chronically infected urinary tract, until April 1928, when a left pyonephrosis developed, and on April 13, 1928, a left nephrectomy was done. During the convalescence a stone was discharged from the wound. There was still some left-sided pain persisting, and the general condition of the patient was not good. He was not able to work at all. An unsuccessful attempt was made to close the recto-urethral fistula in August 1928. X-rays at this time showed two calculi in the lower pole of the right kidney; one measured one by two centimeters, the other very much smaller. The patient was still unable to do any work, and on February 25, 1929, following an automobile ride, he developed severe colicky pain in the right kidney region, radiating to the abdomen; nausea and vomiting. He entered Lane Hospital on February 26, 1929. X-rays showed the stones in the right kidney as before. Urine showed much pus and many red blood cells. White blood cells were 19,100; polymorphonuclears, 77 per cent. Blood urea was 36.75 milligrams per 100 cubic centimeters of blood. Temperature on admission was 40.2 centigrade. The temperature fell gradually, reaching normal limits in five days. Ten days following the onset of attack, March 8, 1929, pyelotomy and partial nephrolithotomy operations were done. After a resection of the twelfth rib, the lower pole of the kidney was exposed and the ureter found and held in a ureteral clamp. An incision was made into the pelvis posteriorly at the ureteropelvic junction, sufficient to admit the little finger. The smaller stone was removed through this incision with the stone forceps. The larger stone could not be extracted through the pelvis; a curved clamp was pushed through the cortex of the kidney into the pelvis and the stone grasped through this incision. Considerable infection delayed the healing of the wound. Temperature was septic for ten days postoperative, but following this it dropped to normal and recovery was complete. On April 12, 1929, successful repair of the recto-urethral fistula was performed. On June 14, 1929, x-ray examination showed no calculus. X-ray was repeated on December 5, 1929, and was negative. Blood urea, 30 milligrams per 100 cubic centimeters of blood.

* * *

Case 3.—G. C. Hospital No. 149283. Greek; male; age, fifty-seven. Gardener. This patient entered the hospital on February 8, 1929, complaining of having had severe pain in right side and back, nausea, vomiting, and anuria for twenty-five hours. He had had a left nephrectomy three years before for pyonephrosis with calculi. One and one-half years following this a suprapubic prostatectomy was done. Examination on admission showed a very sick man. Temperature, 38.3; pulse, 112; rigidity and tenderness in the right kidney region. Cystoscopy showed no bladder urine. Catheters were passed up the right ureter about twenty centimeters, but no urine was obtained. X-ray showed no calculus. Diagnosis of calculus completely obstructing right ureter was made. Operation was performed on February 9, 1929. The lower pole of right kidney was exposed in the usual manner. The ureter was dilated down to a point five centimeters below the ureteropelvic junction. At this point a stone was palpated. The ureter was incised over the stone, and very dirty urine gushed out. The stone was removed and the wound closed with drainage. The patient was in much better condition at the end of the operation than at the beginning. Blood urea at operation was 120; postoperative, it rose to 170 and fell to 30 at time of discharge. The patient ran a septic temperature for two weeks, followed by a low-grade temperature for twenty-one days. Patient was discharged on the thirty-ninth day.

* * *

Case 4.—W. M. Hospital No. 167502. Russian; male; age, fifty-nine. Paperhanger. Patient entered Lane Hospital on October 25, 1929, complaining of having had pain in back for four years. Two years previously the patient was operated on and three hundred small stones were removed from the left kidney. The pain persisted on the right side. The patient was uremic. Blood urea, 102 milligrams; white blood cells, 21,200; polymorphonuclears, 78 per cent; hemoglobin, 70 per cent; red blood cells, 3,960,000. Cystoscopy and intravenous indigo-carmine revealed a functionless left kidney. Accordingly it was decided to operate the right kidney, containing the large stag-horn calculus. The kidney was exposed in the usual manner; resection of the twelfth rib gave excellent exposure. The pelvis, which was extrarenal, was opened and the stone crushed with forceps and removed in pieces. The patient made an uneventful recovery and was discharged on the twentieth day postoperative. The blood urea rose to 198, postoperative, and had fallen to forty-eight on day of discharge and this level is still maintained. The patient continues to pass small stones, but is feeling quite well. Cystoscopy now shows a good functioning kidney on the right; the left is still functionless. He refuses operation on the left side.

CONCLUSIONS

1. There were no more difficulties nor complications encountered in this small series of solitary kidney patients than in those with two kidneys.

2. These patients were just as operable and were better risks before they developed their intense pain, sepsis, anuria, and uremia.

3. The practice of gentle handling of the kidney with as little trauma and perirenal stripping as possible and rib resection for better exposure is a large factor in preventing serious postoperative congestion.

4. Although the fluoroscope was not used in the above patients, we have used it in others and

appreciate its value. It should be used in all cases of pelviotomy or nephrolithotomy, particularly when a stag-horn stone is to be crushed and removed in pieces.

5. Stag-horn stones can be crushed and removed through pelviotomy and partial nephrolithotomy in cases of intrarenal pelves in single kidneys as well as bilateral kidneys, with little or no destruction of kidney tissue.

490 Post Street.

DISCUSSION

ROBERT V. DAY, M. D. (1930 Wilshire Boulevard, Los Angeles).—Doctor Dillon has covered the ground so completely and arrived at such sound conclusions that practically nothing else is left to be said, except to stress his terse reminders. Not infrequently we are face to face with a solitary kidney already badly damaged and containing one or more large stones. It has been my fortune, or misfortune, to have had more than a dozen such cases, and they are the source of much anxiety. When the calculus is entirely within the cortex and not producing infection, or is a large stag-horn stone not causing any obstruction, one is tempted to temporize. With a stag-horn stone, it is often wiser, I believe, not to operate if the patient is having no clinical symptoms, either objective or subjective.

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J. C. NEGLEY, M. D. (527 West Seventh Street, Los Angeles).—The résumé of Doctor Dillon's narration of cases, conclusions and summary, would lead one to believe that surgery is the method of choice in calculi of solitary kidneys. He is well supported in such belief, for all three cases with renal calculi were able to leave the hospital and evidenced some improvement. No details are given as to conservative medical and cystoscopic treatment, so we must conclude they were discarded for surgery.

For myself, I would submit the following observations:

1. Each case of solitary kidney containing a calculus or calculi is an individual problem for which there is no standard treatment, surgical or otherwise.

2. Small or medium-sized calculi in a well-drained portion of kidney parenchyma or calyces may be surgically removed with safety and benefit.

3. Calculi of any size, in a poorly drained portion of kidney parenchyma or calyces, if removed surgically have a tendency to recur.

4. Surgical removal of calculi does not always relieve destructive inflammatory processes nor is the patient always relieved of distressing symptoms.

5. The need of surgical intervention is often obviated by absolute rest with foot of bed elevated eight to twelve inches, no pillows, introduction of ureteral catheter with pelvic lavage, urinary antiseptics, fluids to tolerance, blood transfusions, and other supportive measures.

6. Removal of stag-horn or other calculi that have reached a size sufficient to occupy over half of the renal parenchyma must be accompanied by trauma, with destruction of greater or lesser amounts of kidney substance. During removal numerous portions, microscopic or larger, may be left behind to act as a nucleus for recurring calculi.

7. Immediate surgical intervention is necessary in total or nearly total suppression of urine. Any surgical procedure at this time should include entire decapsulation to provide for increase of tension following operation. To do this, kidney must be dissected from its bed and freed of all adhesions. The question of rib resection must rest with the individual surgeon, and if he feels that in no other way can exposure of kidney be accomplished, then that must be done.

RABIES*

By KARL F. MEYER, Ph. D.
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IN the control of rabies in dogs two procedures are considered efficacious. They are (1) restraint and (2) preinfectional antirabic vaccination. *No matter how effective, vaccination alone will never control outbreaks of rabies.* Both methods when used in combination are expensive and require a well planned, rigid and devoted organization which, sooner or later, involves the authorities in numerous unpleasant controversies. Since it is imperative that the stray, ownerless dog and cat be destroyed or held in strictest isolation for at least three to four months, the administration of any antirabic ordinance must operate in a humane and yet ruthless manner. Furthermore, in order to be effective, the undertaking to free a city or county from this dreaded disease must have the whole-hearted and sympathetic support of the people of the community and, in particular, the press.

RESTRAINT MEASURES

1. Under restraint as a preventive procedure against rabies in dogs and cats one usually classifies the following measures:

(*a*) Licensing of the animals.

(*b*) Quarantine by locking up the dogs on the premises of the owner.

(*c*) Leashing and muzzling them when on the street.

(*d*) Impounding in special kennels provided for this purpose, or

(*e*) Destruction of the stray dogs.

It is believed that leashing is an effective method. However, experience has taught that evasions are quite numerous.

Muzzling is an absolute necessity in order to prevent the dogs from biting man and dogs. A metal muzzle of the basket type, properly fitted, will insure complete and humane protection, provided the owners are instructed concerning their use. Isolation on the premises without muzzling is of questionable value and can only be recommended as a temporary expedient in badly infected areas.

Under the present existing condition of the epizoötic, it is doubtful that the methods of restraint applied to a limited area will accomplish a great deal.

Every effort should be made, by mutual agreement between the health and police authorities of the counties, to introduce control measures from

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* The rabies situation in Los Angeles County has recently given health officials considerable concern. Humane and antivivisection society representatives took a prominent part in the hearings before the Los Angeles City Council. In a conference with Dr. Karl Meyer on the certified milk situation, the editor asked him if he would present his views on handling a rabies situation to the Los Angeles City Council, if so requested. This article and a letter in the Correspondence column of this number of California and Western Medicine are the responses to that request.

For interesting rabies statistics received from the health departments of Los Angeles County and of Los Angeles City, see letters in the Correspondence column of this issue of California and Western Medicine, page 69.

the Tehachapi range to the Mexican border. Then again, no action should be taken until the authorities are assured that the impounding of the stray dog may be followed by a sufficiently long period of quarantine to cover the incubation period of the exposed and bitten dogs, which varies from 7 to 150 days for dogs, and 10 to 260 days for cats. In considering the advisability of this undertaking, the authorities must always realize that the net which collects and renders harmless the stray dog will sooner or later collect some pet animal. These victims of the quarantine procedures which must—to repeat—be ruthlessly administered sometimes, serve as a starting point for numerous controversies. The method of restraint has, therefore, remained unpopular in the majority of American communities. Even when attempted with the best of intentions, the method frequently failed since a strictly enforced, prolonged quarantine and impounding ordinance is rarely tolerated by the dogs and their owners. Animal lovers, humane societies supported by an inadequately informed press and its readers, combined with the inherent human aversion against restriction, sooner or later puncture the most carefully planned control campaign and nullify its effectiveness. In a small, densely populated, readily surveyed area, the method of restraint is more readily administered than in territories with a more scattered population. Experience alone must determine the efficacy of this procedure in southern California. Neither precedent nor past information can serve as a dependable guide. Notwithstanding the disadvantages and objections which have been outlined, it must always be remembered that compulsory restraint has twice freed Great Britain from infection. Many communities, aroused by the unnecessary fatal cases of human rabies, have demonstrated the efficacy of a vigorously and fearlessly enforced quarantine, impounding and elimination of the stray dog.

PREINFECTIONAL ANTIRABIC VACCINATION

2. In view of the difficulties inherent to the quarantine methods, health authorities have in recent years advocated the *preinfectional antirabic vaccination*. While the experimental evidence leaves no doubt that various types of vaccines, the phenol-killed or the chloroform-treated induce immunity that may persist for some months, data relative to their efficacy under field conditions are meager and contradictory. In fact, the unbiased observer finds it difficult to judge the extent to which the vaccination has served as a factor in the control of rabies.

However, one conclusion is justified: vaccination will never replace the veterinary police measures. No protective vaccination is 100 per cent successful; failures in dogs with single injections of antirabic vaccine have been reported. The rabid dog or the animal suspected of rabies must be impounded, and the stray dog must be caught and rendered harmless. The same objections which delay and reduce the force of the restraining methods are usually raised against vaccination. As a means to shorten the quarantine and muzzling period or to facilitate its enforcement, voluntary vaccination with phenol or chloroform treated preparations may receive favorable consideration. The organization of the control measures should include the supervision and compilation of the data on the vaccination by means of a simple reporting system.

APPLICATION OF ABOVE PRINCIPLES

In order to apply the principles here detailed, the following steps must be taken:

(*a*) Solicit the support of the people and the humane societies.

(*b*) Organize an educational campaign among and through the newspapers.

(*c*) Instruct the police force, which will act as the executive branch of the control procedures.

(*d*) Issue a muzzling and leashing ordinance.

(*e*) Impound or destroy the stray dogs and cats.

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THE LURE OF MEDICAL HISTORY

COMPARATIVE RELIGIOTHERAPY*

By W. H. MANWARING, M. D.
Stanford University

A bill recently introduced in the California legislature would create a separate medical board for the licensing of "Christian healers" to treat "spiritual, mental, and physical disease" by the laying on of hands, consecrated oil, etc.[1]

AT least ten million intelligent and conscientious American citizens today are skeptical of the methods and tenets of material medicine. These millions find their only therapeutic logic in the spiritual concepts of the church. To them material therapy is atheism, a sin for them to employ personally, or allow to be employed with their children.

It is estimated that at least one hundred thousand preventable deaths take place each year as a result of this disharmony between the laboratory and the pulpit.

A popular understanding of the parallel evolution of medicine and theology and of the religious faith camouflaged today in so-called materialistic science might go far to bring about the desired harmony.

PART I

ANCESTRAL MEDICINE PRIOR TO THE CHRISTIAN ERA

Animistic Concepts That Preceded Development of Religion.—The medicinal "hunches" of our prehistoric ancestors were presumably similar to the current native curative arts of the Congo

* Popular medical lecture, Stanford University School of Medicine, San Francisco, January 9, 1931.

1 This bill was sponsored by Revs. Lombard and McLeod, San Francisco Christian Science practitioners, and by Revs. Cameron and Bussell, Los Angeles representatives of the American Federation of Healers. The bill, however, was tabled by the Senate Committee, March 30, 1931. (Associated Press dispatch.)

and the Orinoco. Such healing wizardries are based on the animistic concepts of nature, a pseudoscience that preceded the development of religion.[2]

Water flows. It is therefore, alive. Its surface is agitated by the thrown stone. Water, therefore, has sensation. This sentient liquid buries itself in the sand to escape the tropical sun, thus revealing its rationality.

Water drives out the choking demons of thirst. It is thus a friend of man. But it drowns the unwary and is, therefore, a potential enemy. Wild or angry water is thus a logical pathogenic virus, inundating human flesh in anasarca and serous exudate. Friendly or domesticated water is an equally logical therapeutic servant, drowning or washing away nonaquatic pathogenicities.

The body of man melts to water in perspiration, tears, urine, and saliva. Water is, therefore, human: melted human flesh.

Water, in short, is a conscious, intelligent, potentially human personality which may sleep in the form of ice, dance as waves, semivolatilize to a bird-like fog, or fully dematerialize[3] into the great intangible Thunder Bird, general humidity. In each of these four physical states, water is a potential infectious agent and an equally logical living therapy.

Invisible emanations from a nearby lake are aspirated into the human eye and are there condensed into a miniature lake, the primitive concept of vision.[4] On turning the eyes away, this optically aspirated retinal lake diffuses throughout and becomes a living part of human flesh, the primitive theory of memory.

At will this living memory water may be divorced from solid tissues and recorralled in the human eye, the stone-age theory of visualization. From the eye part of this reassembled memory water volatilizes or is willed to evaporate outward, the ancient theory of optical projection. Or the living lake memory may be outwardly projected from the throat, the spoken name of the lake being a nascent lake spirit motivated by human will. This living word[5] may be willed to invade enemy ears as pathogenic or carnivorous water, or to surround and penetrate human flesh as a living hydrotherapy.

This aqueous psychoanalysis epitomizes stone-age medicine. Each object in nature is a crystallized or materialized gas or soul, or colony of souls.[6] Spirits sleeping in solid parts; wide awake in blood, sap, urine, saliva, and perspiration; keenly alert in respiratory tide, body odors, and plant perfumes; diffusing outward in ever-increasing dilution to fuse with the generalized ether of its clan. Each wild or unfriendly man, animal, plant, and inanimate object is thus a potentially pathogenic demon, or carrier of demons. Won to coöperative friendship, each may function as an equally logical spiritual therapy.

Carnivorous mosquito gas logically devours, dominates, transmutes or transubstantiates human flesh.[7] This pathogenic ghost is equally logically killed or driven from malarious flesh by loyal friendly ethers from ceremoniously adopted, insectivorous beaks, claws, or feathers. Or it may be coaxed from infected flesh onto loyal juicy mosquitophilic bananas.

Domesticated snake oil ceremoniously married to human bones logically grafts hypermobile snake spirit onto rheumatic joints. Moleskin ethers logically become symbiotic with human vision, engrafting onto the human eye the mole's ability to see in the dark. The medicinal gong logically broadcasts loyal, epidemiologically trained metal-spirit to battle with prowling miasmas.

Therapy by Captured Personality Ethers Which Have Escaped at Death.—In selecting such apparently lifeless objects as beaks, claws, and feathers as sources of therapeutic gases, jungle science was well aware that it was dealing with dormant drugs, the wide-awake personality ethers having escaped at the time of death. Methods were, therefore, devised for the capture of these highly alert, disincarnate therapeutic emanations.

Such methods are well illustrated by the jungle technique of solar transubstantiation, one of the simpler fire-making ceremonials. Facing the sun, the technician first fills his eyes with the radiated ghost of the Father of All Fire. He then directs his gaze to the fuel, optically projecting the captured retinal image onto the tip of the fire drill. As the drill revolves it reels in this optically projected sun-gas, till sufficient fire-spirit is collected on the drill to digest, eat, transmute, or transubstantiate the adjacent fuel.

By somewhat similar techniques human, animal, plant, and mineral[8] ghosts are captured and corralled in convenient objects. Domesticated wild-cat souls devour miasmatic rodents. Tamed tree-spirits shield from the tropical sun. Captive ethers from the dawn drive away the ever hungry anthropophagic spirits from the west.[9]

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2 Frazer, J. G.: The Golden Bough, Abridged Edition, Chap. IX, p. 117. 1927.

3 "Evaporation" and "dematerialization" are synonymous in primitive science. "Spirit," "ghost," "ether," and "gas" are also interchangeable. Our modern differentiations date from the middle of the seventeenth century, when it was shown that air is a material substance, having definite weight and a definite coefficient of elasticity. Singer, C. Short History of Medicine, Chap. IV, p. 125. 1928.

4 For our own classical versions of this spiritual theory of vision, see: Allbut, C., Greek Medicine in Rome, The Fitzpatrick Lectures on the History of Medicine, Chap. III, p. 103. 1921.

5 The concept of sound as a living spirit did not disappear from medieval science till the demonstration of material nature of air. The transition is well illustrated by Bacon's argument that it is not the Divine Spirit broadcast or dematerialized from consecrated temple bells that controls the storm, but "concussions" in the elastic atmosphere. See: Frazer, J. G., Folklore in the Old Testament, Chap V, p. 426. 1923.

6 From two to seven independent or mutually dependent spirits are at times pictured in each object. When an American Indian describes his "soul" as twelve inches high, he usually refers to but one of his four to seven corporeal ghosts. This multiplicity of somatic essences reached its height in ancient Egypt, thirty-six spirits (or functions) then being pictured in the human body.

7 Malaria is known as "mosquito disease" by certain South American Indians. Contagious ophthalmia was "fly infection" in ancient Egypt. Sleeping sickness is infection with carnivorous "fly ghosts" in equatorial Africa.

8 For mineral ghosts or "spirits of inanimate objects," see Karsten, R., The Civilization of the South American Indians, Chap. II, p. 329.

9 For the "guardian spirit therapy" of North American Indians, see: Goldenweiser, A. A., Early Civilization, Chap. X, p. 184. 1922.

Such captive ethers not only function as individual antitoxins, but may be united, synthesized or trained to coöperative teamwork. Thus united they form a giant polyvalent spiritual therapy. A medicine bag may contain a dozen captive ghosts, ceremoniously fused to form a unit medicinal ether, capable of conquering a wide range of visible and invisible pathogenicities. Fattened with sacrificial meats, reinforced with human blood, such a synthetic polyvalent spirit may be increased in size, strength, and wisdom, till it becomes the major therapeutic dependability of a tribe.[10]

Numerous logical techniques are employed to administer adequate doses of such a healing god.[11] Ceremoniously transubstantiated into loaves, an effective dose of its curative spirit may be swallowed or applied directly to ailing human flesh.[12] In certain primitive cultures the sacramental loaf [13] is supplied with eyes, ears, heart and genitalia, and the transubstantiated god afterward dissected into organ-specific alkaloids. The spiritually charged eyes thus become logical specifics for failing vision. The consubstantiated legs logically expel the carnivorous ethers of rheumatism. The blessed genitalia logically restore lost manhood, or may be used in the ceremonious fertilization of virgins.

Results Attendant Upon Hybridization of Medicinal God with Domestic Animals and Human Mates.—To increase the loyalty of a medicinal god it was often ceremoniously hybridized with domestic animals or with selected human mates. Bulls sired by an astronomical ether bellowed defiance to oncoming storms. Virgins transubstantiated with botanical spirit telegraphed reproductive urge to nearby crops. Solar-hybridized youths drove back nocturnal spiritual anthropophagi.

From such a local hybrid an effective dose of therapeutic spirit is logically transferred by physical contact, by saliva, urine or feces, or by aural, optical or telepathic aspiration. The dung of bovine celestial hybrids is today the supreme antiseptic of a hundred million Hindus, the blessed bovine urine their major spiritual purification. The dung of dogs ceremoniously hybridized with the healing god Aesculapius was one of the most potent drugs of ancient Greece.[14]

Instead of increasing divine friendship, however, such hybridization often had the opposite effect, the pampered healing god enslaving his would-be human friends, demanding daily potions of human blood, periodic feedings with quivering animal or human hearts, commanding constant ceremonious vaudeville, and punishing ritualistic neglect. From this wholly unwished-for result there was born a new theory of disease, disciplinary pathogenesis, purposeful metamorphosis of the healing god into a septic devil, or purposeful withdrawal of his antiseptic spirit, his human slaves abandoned to ever-hungry malignant ethers. Logical prophylaxis thus became bribery, flattery, and cringing conformity to antiseptic will. Logical therapy was human blood, ripe virgins, and special vaudeville, that the angry celestial ether might be lured back into the village and recorralled in his local images.

One special technique of world-wide use was the therapeutic apology or medicinal confessional. In subtropical America this often took the form of a whining enumeration of wholly imaginary sins or disobediences, pretended demonic interference with wished-for obedience to divine commands. By Indian logic, the self-centered god might not be interested in mere human aches and pains, but would exert himself to drive out demons reducing tribal efficiency in his prescribed ritual. He would thus inadvertently scare away minor pathogenicities.

More civilized heathen gods, however, often coöperated with pagan clinicians, had regular office hours and regular fees for consultation service. Revelation diagnosis and revelation therapy thus became routine methods in medical practice, the friendly healing ether speaking in thunder, or in coded message on sacrificial livers.

Hygienic failure of such a civilized pagan deity was often excused and attributed to his illness or senility. Celestial catharsis was a logical antidote, formal physicing of the incompetent invisible therapy through his transubstantiated symbols. Celestial tonics, dosings with alcohol or cocain, ceremonious delousing with tobacco smoke, and divine rejuvenation with human blood, semen, pulsating hearts, or other fragments carved from living human flesh.[15]

If, however, hygienic incompetence was attributed to celestial laziness, more heroic methods were at times employed. Transubstantiated into his idols, the balky healing spirit was lashed with whips, defiled with dung or tortured with fire, till he promised effective medicinal service. Still refractory, he was detransubstantiated, and banished to hell.[16]

Such extreme disciplinary measures, however, were not without danger. A smarting antitoxic ether thus excommunicated and forced to consort with the anthropopagi of the underworld might well return with an acquired lust for human flesh.

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10 For the synthetic origin of early pagan gods, see: Frazer, J. G., The Golden Bough, Chap. XXVIII, p. 315. 1927.

11 Jayne, W. A., The Healing God of Ancient Civilizations, Yale University Press. 1925.

12 For the Aztec therapeutic transubstantiation technique, see: Frazer, J. G., The Golden Bough, Chap. L, p. 488.

13 In Central America this edible therapeutic idol was usually made of a mixture of cornmeal and honey or of cornmeal and chicken blood.

14 Jayne, W. A., The Healing God of Ancient Civilizations, pp. 285, 411. This use of sacramental dung as a logical carrier of "spiritual bacteriophage" was based on the primitive theory of digestion and excretion and had a hundred other equally logical applications, such as in adoption, naturalization, and marriage ceremonials. This passive reinforcement of the individual's own "spiritual antitoxins" with divine "fecal antiseptics" must not be confused with numerous other primitive fecal therapies, oral or cutaneous vaccination with vermin dung or with the dung of noxious insects, for example, actively immunizing the individual against specific or group-specific infectious demons.

15 For such rejuvenation techniques on the Western Hemisphere, see: Karsten, R., The Civilization of South American Indians, Chap. XII, p. 377.

16 The healing gods were thus disciplined in ancient Egypt. Even the Supreme Buddha is subject to therapeutic discipline today in central Asia.

One banished healing god of ancient Egypt thus returned to captain later pestilences and gangrenes.

To avoid this danger, radically different techniques were at times employed, surrender therapy, formal flattery, bribery, and fake servitude to an unconquerable miasma. In ancient India the entire nation thus bowed in pseudoadoration to smallpox, temples, and human servants were consecrated to her service, each communicant being marked with the sacramental vaccination scar, that the carnivorous demoness might recognize those on whose flesh she was honor-bound not to feed.[17]

(Part II will be printed in next month's issue.)

17 In ancient Rome symptoms, rather than diseases, were thus propitiated, the demonesses of pain, fever, stench and itching, for example. See: Jayne, W. A., The Healing God of Ancient Civilization, pp. 399-402, 461-464.

CLINICAL NOTES AND CASE REPORTS

THE MERTHIOLATE—A NEW ANTISEPTIC*

By M. S. MARSHALL, Ph. D.
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A NEW antiseptic, commercially called merthiolate,[1] has appeared within the past few months. Such agents are so numerous that it is difficult to weigh their respective merits. This particular substance is put out by a reputable manufacturer of biologic products, and is sponsored by one of the staff, a man of wide scientific and practical experience. It is the purpose herein to summarize certain facts claimed for merthiolate and to present concisely some of the accumulating local observations regarding this product.

PHYSICAL CHARACTERISTICS

Merthiolate is one of a series of organic mercury compounds synthesized in Chicago during recent years.[2,4] It is the sodium salt of ethylmercuri thiosalicylic acid, $C_2H_5HgSC_6H_4COONa$, apparently the ortho compound. It is a white crystalline substance,[3] 49 per cent mercury. It is precipitated by salts of heavy metals and by acid, but it is soluble, even one part to one part, in water, serum, and the ordinary biologic solvents. It is miscible in soap and alcohol. It is very slightly ionized. In solution it is nearly colorless and tasteless. It is said to be stable in ordinary concentrations of germicidal strength. It has been the experience locally, however, that ten per cent and one per cent aqueous stock solutions crystallize badly on standing for some days under ordinary laboratory conditions. This physical property merits close inspection. Although biologic tests are not sufficiently sensitive to measure a minor reduction in efficiency of merthiolate, due to this crystallization, some reduction should be expected. Furthermore, if crystallization occurs, even though macroscopically imperceptible, in weak merthiolate solutions used for parenteral injection (vaccines or serums preserved with this substance, direct intravenous injection of merthiolate, et cetera), a pronounced irritation might be expected. In human intravenous injections[3] recorded, local inflammation "due to infiltration" was noted in two of twenty-two cases.†

TOXICITY

The toxicity of merthiolate is low. No work locally has involved doses which approach the toxic limit. Rabbits are said to withstand 25 milligrams/kilo, rats 45 milligrams/kilo, and mice somewhat more. If the limit is exceeded, the pathologic picture is that of mercurial poisoning. Dogs withstood two milligrams every third day for twelve doses. Guinea-pigs injected with five cubic centimeters into the peritoneal cavity showed severe reactions with 1 : 1000 dilutions, moderate with 1 : 2000, and none with 1 : 4000 and 1 : 8000 dilutions. The advocated strength in serums and vaccines is 1 : 5000 or 1 : 10,000. In man, twenty-two patients have been injected intravenously with one per cent solution, except as noted above, with no reaction. The maximum single dose was 50 cubic centimeters, and the greatest total dose was 180 cubic centimeters given in five doses.

The action on bacteria indicates a high degree of activity. References state that the typhoid bacillus is killed by 1 : 3000 dilution in ten minutes; the staphylococcus by 1 : 4000 in the same time. Heavy bacterial suspensions are killed usually in one day at dilutions of 1 : 10,000 without loss of antigenic properties. Dilutions of 1 : 1,000,000 inhibit the growth of ordinary bacteria. The substance diffuses in agar to a greater extent than some disinfectants.

Local tests have included no direct clinical applications, but they support the claims regarding germicidal or bacteriostatic activity. Some observations on vaccines and serologic tests have also been made.

The phenol coefficient was estimated at close to 200 (F. S. Paine) as compared to the more conservative figure (40 or 50) stated by Powell and Jamieson.

Heavy bacterial antigen suspensions were killed readily. *Bacterium typhosus* was killed in one per cent concentration of organisms by 1 : 9000 merthiolate in less than twenty-four hours (E. Lewis). Still heavier suspensions of undulant fever organisms were killed by 1 : 10,000 merthiolate in less than twenty-four hours (L. Veazie). This has been repeated by others many times. In broth, dilutions as high as 1 : 40,000,000 inhibited staphylococcus growth for forty-eight plus hours. In agar, 1 : 5,000,000 was the lowest dilution which permitted bacterial growth; higher dilutions inhibited the staphylococcus (H. Prichard). No evidence is at hand to indicate that this substance, used 1 : 10,000, in preservation of immune serums has any objectionable features. The preservation is perfect, and there is no apparent clouding, precipitation, or discoloration.

OTHER OBSERVATIONS

Although there exists no accepted technique for germicidal tests on fungi, a preliminary test

* From the departments of bacteriology in Berkeley and in the Medical School, and the Hooper Foundation, University of California.

† A recent communication states that precipitation occurs only in unbuffered solutions.

with a ringworm fungus, *Trichophyton interdigitale*, indicated that 1 : 10,000 merthiolate would kill the fungus in five minutes, whereas 1 : 100,000 failed to do so. The same was true of the fungus of coccidioidal granuloma (R. A. Stewart). A mold (*Penicillium*) causing some difficulty in a hospital lubricant, was inhibited in agar by 1 : 10,100 merthiolate, and partially but not completely by 1 : 100,000 dilution (M. S. Marshall). The *Monilia* of thrush is, according to experiments in progress, more readily killed or inhibited by merthiolate than by gentian violet in similar concentrations (E. Isnardi).

No information has been sought regarding the activity against protozoan or helminthe parasites.

In serologic procedure, the germicidal activity of merthiolate has indicated its value in the preparation of vaccines or antigens. Agglutination by means of a good antiserum active against certain intestinal pathogens indicated that merthiolate killed antigens were definitely superior to the usual formalin or heat-killed antigens in the titer demonstrated (E. Lewis). The same was true of undulant fever bacteria. Furthermore, on the injection of merthiolate-killed antigen in rabbits, a definitely higher titer was secured than when other vaccine suspensions were used, not only tested against similar antigen but against routine antigens as well (F. Paxton). The use of merthiolate in preserving serum thus far has indicated no effect on the potency. It was used as a preservative on an unstable gland extract without apparent effect which could be attributed to merthiolate (C. L. Connor).

SUMMARY

It may thus be stated, in summary, that the merits of merthiolate as a preservative (*e. g.*, 1 : 10,000) in general laboratory procedure, are fairly well established. Its power to inhibit growth in useful concentrations is great. Used for antigens, either for immunizing or for testing sera, it is equal and probably superior to other common preservatives. It is being tested in various laboratories as a preservative for biologic products, some of which are on the market at present. The possible effect on potency, the possibility of crystallization in minute amounts, and perhaps the possible difficulties with mercury under certain conditions, make necessary some reservation of opinion at present, but the results thus far are uniformly favorable. These facts, together with the apparent low toxicity of merthiolate, suggest a wider use in medical practice, more or less experimentally for the time being, in such conditions as local disinfection, preoperative procedure, and in others of the innumerable applications of antiseptics.

Hooper Foundation for Medical Research.

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TWO NEW INSTRUMENTS OF PHYSICAL DIAGNOSIS

A STETHOSCOPE AND ELECTRIC RESONATOR

By JULES H. MASSERMAN, M. B.
San Diego

IT is the purpose of the present communication to describe the use of two new instruments of physical diagnosis as they have been employed in the admission room and wards of the San Diego County General Hospital. This is a preliminary report.

THE DOUBLE STETHOSCOPE

This is easily constructed from the ordinary Bowles type stethoscope by substituting for the three-way central connection, a four-way connection, to the extra lead of which a rubber tube bearing another Bowles chest piece is attached. This arrangement renders it possible simultaneously to auscultate homologous portions of the right and left chest, the sound from each receptor being conveyed to both ears.

The bilateral, simultaneous auscultation is the basis of a new departure in diagnostic technique, viz., the differential timing of the breath sounds from corresponding lung areas. In practice, the diaphragms are applied to their corresponding sides of the chest alternately until the ear can differentiate the sounds emitted by one lung from those of the other—a distinction easily made, especially when one lung is pathologic. The receptors are then applied to the homologous portions of the chest simultaneously, and, the character of the sounds being disregarded, special attention is paid to the timing of the onset and cessation of the sounds from the suspected lung, as compared with the time of onset and duration of the sounds from the other lung.

This procedure, in our later work, was aided by an even simpler arrangement of the stethoscope. A Bowles chest piece was attached directly to each ear-piece tube so that each side was auscultated by one ear only. While the volume of sound was less, a little practice with the technique soon trained the ears to orient the sounds even more easily.

By repeated clinical test, it has been found that the diagnosis of the following conditions may be aided in the indicated manner:

1. When the sounds of the pathologic side begin by a distinct interval later than those of the sound side, the following conditions may obtain: Unilateral paralysis or fatigue of the diaphragm or other respiratory muscles; partial pneumothorax; obstruction (secretion, stenosis, spasm) of the bronchus supplying the affected area; pulmonary consolidations or cirrhoses; and atalectasis. Prolongation of the expiratory phase of one side, as compared to the other, is almost pathognomonic of unilateral bronchial obstruction from any cause.

2. When the sounds of the affected side begin earlier, the following are suggested: Diaphragmatic adhesions; thickened pleura, or any increase

in the mechanical advantage of the diaphragm, such as may occur in scoliosis, movable subdiaphragmatic masses, etc.

3. By placing one receptor over the apex and the other over the aortic or pulmonic areas, the timing of cardiac murmurs, friction rubs, etc., is facilitated. With the receptor over the aortic and pulmonic areas, respectively, any asynchronicity is easily appreciated.

4. Other uses of the instrument readily suggested themselves. Thus dilatation or partial stenosis of the esophagus may be indicated by a prolongation of the normal interval between the swallowing gurgle heard through one receptor on the larynx, and the later gurgle perceived by the other placed over the cardia of the stomach. In a similar manner the progress of a peristaltic wave of the colon may be noted by placing the receptors at a given distance over that organ and timing the sounds. It is apparent that our short use of this simple instrument has far from exhausted its possibilities, others of which will readily occur to the intelligent clinician.

A review of the literature, preparatory to the submission of this article, revealed that Boston,[1] in 1927, had also reported on the use of a "double stethoscope," equipped with a valve which allowed the sounds from one Bowles receptor to reach the ears immediately *after* those of another applied to the opposite side of the chest. His instrument, however, was primarily meant for teaching purposes, and was not intended to employ the principles of *simultaneous*, bilateral auscultation briefly outlined above. The stethoscope here first described, moreover, may also be used (as was the Boston scope) for the purpose of quick comparison of the sounds from the two sides simply by applying the diaphragms to their corresponding sides of the chest alternately during succeeding respirations. With a metal cover over one receptor, the instrument may, of course, be used as a simple stethoscope.

THE ELECTRIC RESONATOR

This apparatus may easily be built by suspending, in a large, wide-mouthed bottle, an electric bell which is connected by wires running through the cork to a switch and two dry cells. Fitted into a hole in the cork is one end of a flexible anesthetic-machine tube, the pneumatic anesthesia mask of which is held to the face of the patient. By this means the sound of the bell is conveyed, with fair insulation, to the trachea and lungs of the patient. If a large thermos be substituted for the wide-mouthed bottle, the insulation of the sound may be made fairly complete. The bell is preferably one of low pitch, to increase the pulmonary conduction.

The principle is obvious. The constant, even monotone of the bell is substituted for the intermittent, variable, and sometimes unobtainable voice of the patient. The sound is conveyed through the trachea, bronchi, and pulmonary tissues, and follows the same laws of transmission, propagation, reflection and absorption, as does the spoken voice. In practice the patient is instructed to breathe through the mouthpiece, and the bell is switched on, while a stethoscope is run up and down the chest. In this manner areas of increased, diminished or altered sound transmission may be accurately bounded, finer differences in the auscultated monotone being readily appreciated. Again, the two sides may be easily compared by alternate use of the receptors of the double stethoscope, as above described.

CONCLUSIONS

Two new instruments are presented. It is hoped that further experience will confirm their aid in the difficult art of physical diagnosis.

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The Exorbitant Price of Radium.—The *Journal of the American Medical Association* recalls that the journey of Madame Curie to the United States was followed in France with a high degree of interest, and everyone has been profoundly touched by the hearty welcome that she received from President Hoover, the universities and the American press. The gram of radium which was solicited is destined, not for France, but for Poland, the native country of the widow of the French physicist. The press remarks, in this connection, that Madame Curie did not receive the gram of radium in kind but a check with which to buy it, and that she has again protested against the exorbitant price at which the metal is sold today. Since the discovery of the rich deposits of uranium in Katanga province of the Belgian Congo, the problem of supplying the world with radium appears solved, especially since radium is indestructible and will serve indefinitely to furnish emanations and radiations. It has been reported that the factory at Oolen, in Belgium, which treats the mineral brought by the shipload from Africa, has decided to place a limit on its production, in order to prevent a decline in the price, which ranges at present between 600,000 and 800,000 francs per gram. In this connection, attention has been called to the fact that the buyers of radium have heretofore been chiefly laboratories and hospitals, and, furthermore, that the wealth thus acquired by the holders of the monopoly has had its source in the public and private benevolences with which the laboratories and the hospitals are supported. If radium were sold at a much lower price than its present actual value indicates, now that the mineral from which it is derived has been found in abundant quantities, a supply would be available not only in a few large institutions richly endowed by philanthropists but in all the hospitals and laboratories of the world. The speculative profits realized by the holders of the radium monopoly are, therefore, viewed here with severe disfavor, for the reason that they are obtained at the expense of human suffering, disease and death. It has even been suggestd by some that a petition be addressed to the health council of the League of Nations, requesting it to intervene in the matter. In addressing the Academic des Sciences recently, Professor Matignon formulated an urgent protest on the subject. As for Madame Curie, her laboratory possesses only the radium given by Dr. Henri de Rothschild. Not to be obliged to resort to begging in order to obtain radium for the Institut de Cancer, she decided to resist the demands of the radium monopoly and to manufacture radium herself. The city of Paris has granted her a plot of ground and the sum of 1,500,000 francs ($60,000) for the installation of her factory, and the government has allowed her a large subsidy. She hopes, in this way, to be able to serve the cause of humanity by thus helping to lower the price of radium.—*Medical Standard*, October 1930.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

THE SIGNIFICANCE OF JAUNDICE

STANLEY H. MENTZER, SAN FRANCISCO.—Jaundice has been of interest to mankind since history began. To the early Arabians and Egyptians it was a sign from the gods. Its possessors were revered or held in terror. Later they became objects of horror and disgust. It is natural that medical men took an unusual interest in these patients, but the significance of their jaundice was not understood.

Icterus is of no less interest to the medical man of today, and because of its striking presentation ensnares the interest of the layman as well. But though the ancients were troubled about the significance of jaundice, the physician of today is often unable to interpret its import.

Jaundice is one of the major diagnostic features of common duct stones; however, stones may be present in the choledochus when jaundice is absent. This was first shown by Courvoisier in 1890 and later by Fenger. But few probably realize how frequently this occurs. Judd, in 1930, stated that 23 per cent of 160 patients operated upon for common duct stones had never been jaundiced.

The causes of jaundice are too numerous to enumerate. Most texts list seventy or more. These lesions may lie within the liver or bile ducts, or they may arise from the walls of the biliary tree, or may come from extraductal diseases producing angulations, adhesions or compression defects. The jaundice may arise from systemic disorders or accompany acute fevers or infections. Numerous poisons produce jaundice and some blood dyscrasias are accompanied by it. In addition, jaundice is occasionally of unknown origin as in icterus neonatorum and icterus gravis. By our present methods of diagnosis, the cause of jaundice in many of these cases cannot be detected. This is true in the painless jaundice due to common duct stones, or catarrhal jaundice and arsphenamin jaundice when there has been abdominal pain.

Numerous tests have been devised to aid in the detection of jaundice. Some of these date back fifty years. Modern refinements have produced the icteric index, the Van den Berg, and spectrophotometric methods. In addition, dye elimination tests, carbohydrate and protein tolerance tests of liver function have also been elaborated. The detection of urobilinogen in the stool and urine is of importance, and the bile salt tests of Brulé may be of some aid. The presence of bile pigment in the duodenum or in the stool is often of major significance. However, all of these tests are subject to error. Singly they may be of little value, but when used in conjunction with the clinical history, physical examination and other laboratory aids, they may be diagnostic. They are not by any means infallible, however. Even the absence of urobilinogen in the urine does not necessarily indicate obstructive jaundice as has been previously taught, for it is known that jaundice may occur when the obstruction from common duct stones is incomplete.

Although many advances have been made in the study of jaundice during the past ten years, its significance is still often obscure. Icterus is sometimes absent when the physician anticipates it, and it is frequently present when its significance is of minor importance. Abbe, thirty years ago, stated, "Jaundice cannot be considered as pathognomonic of, or constant in, any but the gravest obstructions in the common duct." A slight icterus is often discounted by the physician as not a subject for anxiety, while, as a matter of fact, the gravest lesions may have made great progress while the physician is waiting for other symptoms to develop. Too much emphasis cannot, therefore, be laid upon slight phases of jaundice, for it is only by the early recognition of the graver diseases that the physician or surgeon may opportunely step in to save life.

In résumé, therefore, I might say that jaundice may be but a stepping-stone in arriving at the final diagnosis; or it may be the cornerstone on which the ultimate structure rests, or it may indeed be the keystone that maintains the diagnostic arch. Unfortunately it is sometimes but pumice stone, unimportant and disintegrating under the pressure of other more significant data.

* * *

GEORGE H. HOUCK, SAN FRANCISCO.—An attempt must always be made to explain the existence of jaundice, but when this symptom appears the physician is often baffled both by the large number of disease conditions associated with jaundice and by the realization that the symptom may be of slight significance or of vital importance. The actual recognition of slight jaundice is difficult at times, and is frequently missed under insufficient or artificial light. At times it is erroneously diagnosed in patients who are sallow, or in those with collections of subconjunctival fat. Most patients with carotinemia have been considered jaundiced before the true nature of their pigmentation was discovered.

It is not possible to discuss the metabolism of the bile pigments within the limits of this department. However, in arranging a classification of jaundice it is convenient to make it correspond with what we know of the chemistry of bilirubin. The essential point is that in jaundice caused by obstruction the bilirubin has passed through the polygonal cells of the liver. But jaundice may also be due to bilirubin that has not passed

through these cells, and it is possible to differentiate these two varieties of bilirubin by relatively simple chemical tests. Perhaps the most convenient classification of jaundice is that devised by McNee:[1]

Obstructive hepatic jaundice, in which bilirubin is prevented from escape by obstruction of the bile tract. This bilirubin has passed through the polygonal cells and is reabsorbed into the blood stream.

Hemolytic jaundice, in which the polygonal cells do not function normally, and in which the pigment passes directly from the Kupffer cells to the blood. Somewhat the same effect occurs if, through excessive blood destruction, pigment is offered to the polygonal cells more rapidly than they can pass it through to the bile capillaries, and a portion is then absorbed directly into the blood stream.

Toxic and infective hepatic jaundice, in which the mechanism producing jaundice is a combination of the two previous forms, there being both obstruction and direct absorption of bilirubin.

This classification aids us in the interpretation of the van den Bergh reaction performed upon icteric sera. In jaundice due to obstruction there is an immediate development of color, but in sera from patients with hemolytic jaundice there is definite delay. Both elements are present in the biphasic reaction obtained in toxic and infective hepatic jaundice. The reaction may be modified so as to serve as a quantitative determination of the concentration of bilirubin in the blood. This last determination, however, is more usually performed by a direct comparison of the yellow color of a jaundiced patient's serum with standard solutions, the result being expressed in arbitrary units and called the *icterus index.* In order to secure reliable results, blood specimens must be protected against hemolysis in both the van den Bergh reaction and in the determination of the icterus index. From the use of these methods we now know the bilirubin content of normal serum and the renal threshold value. The most significant clinical advance made possible by these methods has been the recognition of latent jaundice.

However, when confronted with frank jaundice the physician but rarely has the benefit of the van den Bergh reaction, and must consider the age of the patient, the presence or absence of pain and fever, and the amount of jaundice. If from the presence of bile pigment in the urine and its absence in the stools we believe the jaundice due to obstruction of the biliary tract, it becomes necessary to distinguish between cholelithiasis and malignant disease. A painless progressive jaundice is almost always due to neoplasm, either through obstruction of the common duct or by obstruction of the intrahepatic ducts by metastatic tumor. An exception to this rule is the so-called catarrhal jaundice which is usually seen in young patients with gastro-intestinal symptoms. A palpable gall-bladder in jaundice is almost always an indication of neoplastic obstruction (Courvoisier), while the gall-bladder is rarely distended when the obstruction is due to cholelithiasis.

Hemolytic jaundice is more usually chronic and slight in degree, but may be acute, as in paroxysmal hemoglobinuria or in massive hemolysis following severe snake bites.

The forms of jaundice seen in early pneumonia, typhoid fever, or septicemia frequently cause confusion, but emphasize the frequence with which jaundice may occur in the acute infections. The liver does not escape in severe hyperthyroidism, and this toxic damage is called to mind by the mild jaundice which is seen in some patients.

* * *

JOHN V. BARROW, LOS ANGELES.—Clinical jaundice signifies the inability of the system to rid itself of bile or bile products. The fault may lie in a diseased condition of the eliminating mechanism, in the overactivity of the bile-producing mechanism, or in the blocking of the terminal excretory bile ducts. In any instance jaundice signifies a serious condition and its termination is more or less a conjecture.

As a quantitative measure of jaundice such tests as the icterus index are helpful both diagnostically and therapeutically. Diagnosis must be further aided by physical findings and signs. Pain and tenderness over the gall-bladder or masses in that area always bring up the question of cholecystitis, cholelithiasis, cholangitis, malignant growths, and simple pressure by adnexal inflammations. Inflammatory processes from the pelvis and from the bowel may at times block the bile ducts sufficiently to interfere with bile elimination.

If the mechanical findings are those which only surgery can remove and, therefore, are such that amelioration without such proceedings will not occur, the delay in operative work is inimical to progress, even in the face of jaundice. In conditions where the smaller bile ducts and the liver tissues are involved, as in hepatitis and cholangitis, then the use of conservative medical measures as diet, alkalies, bowel elimination, plenty of fluids, and rest are the great essentials. To these remedies may be added drugs such as the phosphates, bile salts, ipecac, and probably endocrine therapy. In this connection it is well to state that ipecac and its derivatives, sensibly administered over a few days' time, are probably the greatest remedial measures. This treatment is especially effective where the infection originates in the colon and involves the liver. When the reticulo-endothelial system is involved and there is systemic reaction in the blood-forming organs, as in pernicious anemia and the leukemias, then therapy such as liver, pig's stomach, and other blood-building aids are of great benefit.

The clinician has a serious obligation on his first visit, or at least during the early diagnostic period, for at this time needful surgery invoked is life-saving, and medical measures when needed are equally important. The plan of treatment may need to be as conservative as the diagnosis. The practitioner of medicine must always regard clinical jaundice as extremely important.

1 L. McNee, J. W.: Quart. Jour. Med., 16:390, 1923.

California and Western Medicine

Owned and Published by the

CALIFORNIA MEDICAL ASSOCIATION

Official Organ of the California, Utah and Nevada Medical Associations

FOUR FIFTY SUTTER, ROOM 2004, SAN FRANCISCO

Telephone Douglas 0062

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Subscription prices, $5.00 ($6.00 for foreign countries); single copies, 50 cents.

Volumes begin with the first of January and the first of July. Subscriptions may commence at any time.

Change of Address.—Request for change of address should give both the old and the new address. No change in any address on the mailing list will be made until such change is requested by county secretaries or by the member concerned.

Advertisements.—The journal is published on the seventh of the month. Advertising copy must be received not later than the 15th of the month preceding issue. Advertising rates will be sent on request.

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EDITORIALS*

GOVERNOR ROLPH SIGNS A. B. 477 (NIELSEN) FOR STATE MEDICAL LIBRARIES

California State Medical Library Bill (A. B. 477—Nielsen) Was Signed by Governor James J. Rolph, Jr., on June 9, 1931.—The date of June 9, 1931, is one which should have a place in the annals of the California Medical Association, for on that day Governor James J. Rolph, Jr., signed A. B. 477 (Nielsen), thus enacting into law the recent act of the legislature which provides for the institution and maintenance, under the University of California, of a state medical library having major branches at San Francisco and Los Angeles.

For this approval which Governor Rolph gave to the state medical libraries act, the people of the State and the medical profession also, have reason to be grateful. Such medical libraries should and no doubt will become real factors in the betterment of the public health in California and in the maintenance of high educational standards and activities.

In last month's (June) issue of this journal, page 417, a brief history of this particular legislative act was sketched. To those who were giving special attention to the measure, it was a great relief when Governor Rolph attached his signature to A. B. 477, and our thanks are extended him for giving his approval to the measure.

* * *

Text of the Bill Is Printed in This Number of California and Western Medicine.—The full text of that act, for the convenience of those readers who are interested, is printed in the Miscellany department of this number of CALIFORNIA AND WESTERN MEDICINE (page 68).

Details concerning the institution of these state medical libraries cannot be given at this time, because the act will not become operative until September 9, 1931, after which time President Robert G. Sproul of the University of California will no doubt call his advisory committee together to discuss ways and means whereby the largest and most efficient type of service may be instituted.

* * *

The State Library Act Also Provides for "Exhibits."—A perusal of the measure will indicate its broad scope. The library work can be carried on not only through books and other publications but through "exhibits." In other words the educational activities, insofar as medical and public health education are concerned, are not solely restricted to books and publications. In our present day and for the future, such latitude is especially desirable; and in this instance it is hoped will work out to definite advantage in public health work. Exhibits which can be used in the education of members of the medical profession, can be made valuable also to members of the lay public, if properly presented. As Doctor E. Starr Judd of the Mayo Foundation, in his this year's presidential address to the American Medical Association *(Journal American Medical Association*, June 13, 1931, page 2007) stated:

"The idea of medical education for the public is not a new one, but the importance of it is more fully realized now than it was in former years . . . . . The consensus among members of the medical profession generally is that some sort of publicity should be supplied by which the public will be made to understand the nature, the purposes and the results of the efforts made by scientific medicine for prevention and control of disease."

A library exists for the better dissemination of human knowledge, and since exhibits of scientific studies promote the dissemination of such knowledge it is possible that the provision of exhibits in the California State Medical Library Act may be productive of much good.

* * *

Major Function of the State Medical Libraries Will Be to Provide a "Package Library Service."—So far as the editor knows, it is not the intention to use any of the fifty thousand dollar appropriation for the erection of buildings, because the University of California fortunately can utilize some of its present housing facilities. Nor probably will it be deemed desirable to have reading rooms in San Francisco and Los Angeles, since such reading room facilities are quite ample at the University of California, Stanford and the

* Editorials on subjects of scientific and clinical interest, contributed by members of the California Medical Association, are printed in the Medicine Today column which follows.

Barlow medical libraries. It may be stated that the original intent of the plan was to have the state medical library, through its major branches at San Francisco and Los Angeles, to act more particularly as a distributing agency for the publications in the three libraries just named, through what is known as a "package library service." In other words, the thought was to make it possible for all medical men and women in California to feel perfectly free, as tax paying citizens, to avail themselves of the privileges of this state institution, which through the state university, would bring to all licensed physicians and surgeons who so requested, the latest medical literature on any indicated subjects.

The advisory board, in addition to President Sproul of the University of California, will consist of four physicians who are in active practice, each of whom has had considerable organization and institutional experience. Therefore it may be taken for granted that the plans of procedure recommended by them will be of a practical nature.

* * *

Thanks to All Who Aided in the Passage and Approval of the State Medical Library Act.—In leaving the subject, we wish again to thank all who aided in the passage of Assembly Bill 477. The successful outcome is gratifying not only because of the great possibilities in the Library Act itself, but as demonstrating that with a cause having merit, and with clear thinking and action, much of what seems impossible from the standpoint of possible legislative action may, nevertheless, be accomplished.

RABIES IN CALIFORNIA*

The 1909-1916 Outbreak of Human Rabies in California.—In this journal in 1913 and again in several issues of the year 1916, Dr. J. C. Geiger, then with the Bureau of Hygiene of the California State Board of Health and now with the Hooper Foundation for Medical Research of the University of California, printed several important papers on outbreaks of rabies in California.

From page 315 of the August 1913 *California State Journal of Medicine* (for that was the name of CALIFORNIA AND WESTERN MEDICINE at that time), we quote from Geiger's opening paragraph:

"In an article written in 1910, Black and Powers reported a small outbreak of rabies among dogs in Los Angeles in 1898. They also reported a fatal human case in Pasadena in 1899 and another outbreak of rabies among dogs in the Soldiers' Home near Los Angeles in 1906. In Stimson's report on rabies, published in 1910, California was declared to be one of the states that was free from the disease. In 1909 the present epidemic began to attract attention and two articles by Sawyer show the spread of the disease up to April 1, 1912. The spread of rabies has been continuous and rapid throughout the state. The toll of human deaths has been eighteen and the loss of valuable livestock has been considerable. Organized efforts have been made to check its progress, but the lack of coöperation on the part of the county officials, and a bitter opposition from other sources, have greatly retarded the work so far. The presence of rabies in any given community will cause considerable excitement and the passage of numerous laws, which in time are forgotten."

From the June 1916 number, page 230, the following:

"The first case of rabies in human beings in California occurred in March, 1899, and was reported by Radebaugh. The remaining cases, thirty-three in all, occurred during the epidemic of rabies that, since 1909, has swept completely through California. Colburn, Black and Powers, Sawyer and myself reported that up to April 1, 1913, the toll of human deaths from rabies in California was eighteen. Between April 1, 1913, and March 31, 1916, there were fifteen cases."

Again from the July 1916 number, page 276, may be quoted:

"Since 1909, and until recently, rabies has been epidemic in California. Despite the dissemination of knowledge in regard to the control of the disease, rabies among animals in California steadily increased. The height of the epidemic has been reached and passed, and rabies may be considered under control except in Modoc and Lassen counties. This is partly due to the peculiar tendency of an epidemic of rabies to spend itself, the measures instituted for control, and the fact that the disease has become endemic in the more populous communities.

"The advent of the disease in coyotes in Modoc and Lassen counties, which was accomplished through infection traveling from Oregon and Nevada, was made the basis of a remarkable campaign against these animals by the California State Board of Health. The financial loss in livestock alone in Modoc and Lassen counties from rabies places this disease in the forefront as the enemy of the cattle and sheep men. Therefore, the prompt eradication of rabies is a necessity, both in city and rural communities, because of the serious element of human danger on the one hand, as shown by the large number of deaths from rabies in human beings in California, and from an economic standpoint on the other, as shown by the experience of Modoc and Lassen counties."

In a supplementary report in the December 1916 number, Geiger stated:

"In a previous article, the number of cases of rabies in human beings in California was reported as thirty-four. A report of two additional cases, making thirty-six in all, is given."

* * *

The Recent Outbreak of Rabies in Los Angeles County.—In the last several months, the newspapers of Los Angeles County have given considerable publicity to a new outbreak of rabies, with one human death recorded therefrom. In the correspondence column of this number are printed letters sent in at the request of the editor, which give some sidelights on the present rabies situation in California. The directors of the State Board of Health and of the health departments of Los Angeles County and City gave early attention to the recent outbreak, and their efforts to educate the public in regard thereto, as is usually the case, promptly resulted in the self-injection into the picture, of representatives and spokesmen of the lay humane and antivivisection and similar societies. In the conferences which were held with the Los Angeles City Council these, rather than medical organizations, seemed to be the dominating elements.

* Editor's Note.—For interesting rabies statistics received from the health departments of Los Angeles County and of Los Angeles City, see letters in the Correspondence Column of this issue of California and Western Medicine, page 69.

Rabies in Great Britain.—For the benefit of readers who believe such lay interference to be typically Californian or Southern Californian, a quotation from an article by David M. Greig, Conservator of the Royal College of Surgeons Museum, Edinburgh, and printed in the *Edinburgh Medical Journal* of December 1930, page 698, may be in order. In his opening paragraph Greig speaks of rabies as follows:

"Perusal of the *Edinburgh Medical Journal* of a hundred years ago, and of other medical journals of the half century preceding that, yields convincing evidence of the frequency of rabies in man. Many of these cases are fully reported in realistic detail which even to the lay mind might picture the illness and death, perhaps the most terrible to suffer and the most horrible to witness. Today, in Britain, rabies to the medical practitioner is almost of merely academic interest, while to the laity the very name of hydrophobia provokes no particular aversion. Yet on the Continent of Europe and in Greater Britain it remains an ever possible occurrence demanding vigilance for its control and ability for its recognition and successful treatment."

And again:

"There are those of us who remember the time well. Mad dogs were only stray dogs, it was said, not pet dogs carefully housed. Hydrophobia never occurred in winter, it was alleged, and, worst of all, it was asserted that dogs muzzled in the summer time were driven mad because, being muzzled, they were unable to slake their thirst. Well may the dogs pray 'Protect us from our protectors.' . . . . .

"In 1893, the cases of rabies rose to ninety-three, in 1894 to 248, in 1895 to 672, and then again came public agitation. The 'Rabies Order' was promulgated on March 23, 1897, and the magistrates of the counties and boroughs were left no discretion in the matter. Muzzling was reimposed and by the 'Dogs Order' on May 7, 1897, the importation of hydrophobia from abroad was stopped."

Greig evidently wrote his article in part, as a protest against the efforts of those lay and other fellow Britons of our present hour who are seeking to break down the laws which in past years have protected Great Britain from rabies outbreaks. He speaks of those who were making such efforts as follows:

"Within the past twelve months (year 1930) mistaken dog 'lovers' have written to the papers demanding the removal of quarantine for dogs which they allege can be better looked after by their owners at home, than they can be by strangers among whom they are compulsorily and cruelly immured. But successive governments are taking no risks, if not from the humanity of cynophilia, then from the inhumanity of politicophobia, and the dole-supported voter may loaf on the highway without this additional danger."

* * *

A Rabies Article in This Number of California and Western Medicine by Director Karl Meyer of the Hooper Foundation, University of California. The purpose of writing what has been given above is to call the attention of medical men to this recent outbreak of rabies in Southern California and also to emphasize the desirability of reading an article from the pen of Director Karl Meyer of the Hooper Foundation for Medical Research of the University of California and printed in this issue (page 39).

The editor some weeks ago suggested to one of the city councilmen of Los Angeles that Director Meyer be written to, with a request for suggestions. The article above referred to and a copy of a letter which is printed in the correspondence column of this issue, are the responses of Doctor Meyer thereto.

Rabies is one of the diseases which, fortunately for the human race, is only rarely encountered nowadays, but it is a disease which, like smallpox, will be encountered when sane protective measures are not observed. It seemed desirable, therefore, that a statement by someone who has had past experience in the handling of rabies situations, as Doctor Meyer has had in South Africa, should be made, for such a statement could be of considerable value to both the medical profession and the lay public of California. That is why the subject is commented upon in this column.

COMMENT ON THIS AND THAT

On Some Recent Statements Regarding Deaths During Childbirth.—In the San Francisco *Chronicle* of May 7, 1931, was a front-page article with double-column heading, "Mrs. Hoover Scores Deaths in Maternity." The above caption was evidently based on the fact that Mrs. Hoover was among those present at a New York City meeting held in connection with Mother's Day, and which was attended by some four hundred women.

The lay woman president of the Maternity Health Association, which organization sponsored the meeting, "declared that at least 10,000 of the 16,000 who died yearly could be saved through proper care." These figures referred to the deaths of women during childbirth. It would be interesting to know the background and authority for the above figures, which were broadcasted in an Associated Press dispatch.

Equally interesting was the concluding statement which stated: "Dr. Philip Van Ingen, secretary of the American Child Health Association, said that often physicians themselves were not educated properly for obstetrical work and that European midwives, supervised by the government, often have lower mortality rates than American doctors."

Perhaps this Doctor Van Ingen will explain whether he was talking of nonsectarian or cultist physicians, or both; also, what changes he would inaugurate in the obstetric courses of the Class A medical schools of America; and in making his comparisons with some of the European nations with geographical domains much smaller than many of our states of the United States of America, will also explain whether or not he thinks his analogy to such paternalistic European governments to our own independent American commonwealths is a fair one.

It is such an easy matter to make striking speeches about the prevention of diseases and of deaths, but such a very difficult task to actually

prevent disease and death. Especially so, if the morbidity and mortality diseases are associated with social as well as physical community ills. One is sometimes tempted to think that some of the executive secretaries of certain well-meaning lay organizations spend more time in thinking up startling slogans for use at meetings and conventions than they do in unostentatious and laborious effort to bring better procedures and methods into play. Such exploitations must probably be accepted, however, as an expression of the propaganda spirit which has been so rampant during the last few years of super-economic prosperity. With the harsher times of today and the deflation of economic values may come perhaps a partial deflation also of some of the propaganda and word phrasing above quoted. If so, a good purpose may be served, and the world may yet see itself move forward in its civilization with as much and as steady progress as when under the influence of convention, radio, or press propaganda.

* * *

The Los Angeles County General Hospital Hearing.—At the time the copy for the July CALIFORNIA AND WESTERN MEDICINE is going forward to the printer the Los Angeles County General Hospital hearing, to which reference has been made in this column in the last two issues of this journal, has finally come, if not to an end, then at least to a pause. The story of the situation at the time of this writing is summarized in the following excerpt, taken from the Los Angeles *Evening Herald* of June 18, 1931:

"With the hearing of the charges of incompetence against Dr. Neal N. Wood, as superintendent of the General Hospital, ended, the board of supervisors today had the case under advisement. Their decision as to the retention or dismissal of Doctor Wood will be announced later.

"Closing arguments by counsel were heard yesterday. Supervisor Frank L. Shaw, who had preferred the charges against Doctor Wood, moved that he be dismissed, but the supervisors voted this motion down. They then took the matter under advisement and voted to adjourn.

"None of the board indicated when the decision would be reached."

If a decision is reached by the board of supervisors before the forms for the July CALIFORNIA AND WESTERN MEDICINE are closed, a notation will be made of the outcome.

In the meantime it may be in order to state that it is the editor's opinion that if the board of supervisors of Los Angeles County discharges Superintendent Wood at this time, when the massive sixteen-million-dollar acute unit is still in course of erection, that the said board, through such action, will probably put the taxpayers of Los Angeles County to an untold loss in money, running into some hundreds of thousands of dollars. For at this time, outside of the architects who only plan professional facilities as directed, Doctor Wood is practically the only man who knows not only the intimate details of the plans of construction, but what is equally important, the object and purposes of many of the arrangements. What Doctor Wood knows on this subject is knowledge acquired during many hours of study of plans during the last several years. No one other medical man has that knowledge, nor can any one other medical or lay man acquire that knowledge without money loss to the county of Los Angeles.

In making this statement the editor holds no brief for Doctor Wood on the matter of the new acute unit, as witness the comments in this column in former issues of CALIFORNIA AND WESTERN MEDICINE (February 1930, page 117; and March 1930, page 193).

Nevertheless, to dispense with Doctor Wood's services at this time cannot result in anything else than a great money loss to the taxpayers of Los Angeles County.

* * *

Doctor Rooney's Historical Sketch of the California Medical Association—Every County Society Should Have a Committee on History.—How many of the readers of CALIFORNIA AND WESTERN MEDICINE perused the item in last month's June "Twenty-Five Years Ago" column, which was excerpted from the California Medical Association presidential address of Dr. Robert R. Rooney? The quotation dealt largely with a brief outline of the early history of the California Medical Association, but gave expression at the same time to such depth of loyalty that it is good for those who are in active work some twenty-five years later to appreciate that our medical forbears in California sensed their organization obligations as keenly as do we of this later day and were quite as alert in solving the problems of their time as are we in our own period.

Doctor Rooney, who lives up in the Sacramento region, in the old town of Auburn, graduated from McGill as a member of the class of 1870. He had the honor to serve two years as president of the Medical Society of the State of California (the former name of the California Medical Association) because the great earthquake of 1906, which took place while the thirty-sixth state medical association session was being held, brought the convention proceedings to a sudden stop. Doctor Rooney is the oldest of the living ex-presidents of the California Medical Association, although Dr. W. LeMoyne Wills, Pennsylvania 1882, of San Marino, Pasadena, is the senior living ex-president, he having been the head of the California Medical Association some ten years earlier, in 1896.

Doctor Rooney's historical references may also serve as a reminder to all county medical societies which have not yet done so, to appoint their committees on history for their respective societies. The report of the California Medical Association Committee on History was printed in the June 1931 CALIFORNIA AND WESTERN MEDICINE, page 444, and a list of local committees on history was there given. If your county society has no such committee, drop a line to your president and ask him to appoint the same and to forward the names to the central office of the California Medical Association at San Francisco. A

history of the California Medical Association and of its component county societies cannot be compiled until such time as the component county societies show interest and intent to coöperate in the work. If your county society is not represented in the list as printed on page 445 of the June issue, you can render a service by calling the attention of your president thereto. These coming summer vacation months would be a convenient time in which old books and records could be gone over by such committees and the groundwork of their compilations laid out.

* * *

A Component County Society of the California Medical Association Makes a Contract With the Boulder Dam-Metropolitan Water District of Southern California.—The *Bulletin* of the Los Angeles County Medical Association of June 18, 1931, prints some very interesting information concerning an arrangement made between that county society and the Metropolitan Water District of Southern California. Under the said arrangement, the Metropolitan Water District will collect from every employee a stated sum per month to create a fund through which such employee will receive medical and hospital care for sickness or accidents not covered by the Industrial Accident Acts. Each employee would have the privilege of choosing any member of the Los Angeles County Medical Association to give such professional care. A fee table was compiled and the district will pay the expenses incurred. Members of the California Medical Association who are interested in this new departure will find an outline of it in the Medical Economics column of the Miscellany department of this issue (page 66).

It is hoped that this attempt to maintain the important element of individualization in medical practice will be successful. The experiment will be watched with much interest. The details of the plan are worthy of special consideration by all county society committees on medical economics.

* * *

Certified Milk and Its Proposed Pasteurization.—Back in Newark, New Jersey, in the year 1888, Dr. Henry L. Coit advocated the production of cleaner and better milk, and as a means to the attainment of that end conceived the plan of having county medical societies appoint milk commissions which would supervise the production of the highest possible grade of clean pure milk. He coined the phrase "certified milk," copyrighting it, and permitting its use only by authorized county medical society milk commissions.

The editor was a member and secretary of the original Milk Commission of the Los Angeles County Medical Association, which came into existence a quarter of a century ago, the commission still having its original chairman, Dr. F. C. E. Mattison, and its original secretary. The modern dairy, with its up-to-date equipment, presents a quite different set-up from the dairy of twenty-five years ago. Much of the credit of the better and cleaner milk which is produced today is the result of the work of the early certified milk commissions of the United States which acted as pace-makers for federal, state, county, and city health officials, who also took up the work of better milk production.

More recently the vogue for pasteurization (a method not so long ago looked at somewhat askance) has again come into favor. Some of the more enthusiastic proponents of pasteurization even insist that certified milk should be pasteurized. In a letter sent out by John S. Ellsworth of Simsbury, Connecticut, who is the owner of the Holly Farm and Certified Dairy of that place, this hue and cry for universal pasteurization is commented upon. One paragraph from his letter would seem to be worthy of thought by all who have a special interest in the production of pure milk. It reads as follows:

"It is my own personal opinion that certified milk stands as the last barrier against overzealous but ill-advised officials whose growing tendency is to shout for pasteurization as though it were magic cure-all for every evil, whereas we know too well that it still remains a problem. If the barrier is weakened, in my judgment, certified milk will cease to be; but of far more reaching consequence will be the results to the nation, both economically and on the score of health. What we need is more clean milk and less of the other kind—not vice versa.

"I have no desire to block well-matured conviction, but it seems to me that at this moment we are far removed from either the necessity or justification for a step which is likely to be irrevocable."

Here in California the certified milk commissions in both the north and south have given serious consideration to the agitation above referred to. It may be said that they are still in favor of a certified milk that is raw and clean.

* * *

The California Legal Profession at Last Adopts a High School Standard of Preliminary Education.—More than twenty years ago practically all nonsectarian medical schools of the United States were working under a preliminary education requirement of minimum education, demanding a four-year high school course or its equivalent. As a matter of fact, even at that day many medical schools demanded even more preliminary education than a four-year high school course.

Today most of the Class A medical schools demand a four-year high school course plus two or three years of liberal arts work of collegiate standard.

It seems strange that the legal profession should have been so tardy in raising the educational standards of its disciples. However, better late than never. We believe that with such higher standards of legal education, many of our judges in the future will be more apt to interpet our state medical practice acts in favor of proper educational standards and of protection of the public health. It has been a strange experience in the past that, both in the legislatures and from the bench, our medical practice acts in America have had much to fear from the legal profession.

The Los Angeles *Express* of June 16, 1931, printed an editorial entitled "Education of Lawyers." In view of the facts above mentioned, it seems worthy of a place of record. Quotation follows:

"Persons admitted to the practice of law in California hereafter must come with at least a high school education or its equivalent. Governor Rolph just has signed and made law of a bill passed by the legislature demanding such educational qualification of future lawyers.

"Strangers in California likely will marvel at the moderation of the new requirement. They don't know our lawyers. They are accustomed to literal application of the term 'learned counsel,' and find it hard to comprehend the existence of a state bar and judiciary composed even in part of men whose background of educational accomplishment falls short of the meager high school curriculum.

"Yet the small gain made by this measure was accomplished only after a struggle. The bill had been prepared by a committee of the self-governing state bar, and was supported at Sacramento by educators as well as a large body of the legal profession. But there was opposition. Legislators felt 'rights' were being infringed, and that possibly some budding Abraham Lincoln would be deprived of his chance to rise out of poverty and illiteracy to eminence at the bar and political greatness. These were not farmer members, but lawyers, who talked that way.

"In face of such opposition, the bill was passed, and has been signed and made law. It is a step toward a literate bar and judiciary in this state."

Now arises the question: How long will it be before the legal profession of California, through its state bar, will demand a definite amount of preliminary education of collegiate standard, as do the medical schools. For surely in law, as in medicine, both being of the learned professions, an adequate and broad preliminary education would work to the elevation of the highest and best standards.

Central Office Section.—An excellent opportunity was offered the Department of Professional and Vocational Standards to extend its educational work to the people of California through the medium of the State Fair, from August 30 to September 7. Availing itself of this opportunity, the Department, through the coöperation of the members of the various units, presented interesting and instructive exhibits covering the activities of nine of the boards and sections.

For the first time the general public was brought into direct contact with and given first hand knowledge of the new Contractors' License Law and the equally new Civil Engineers' Registration Law. The scope of the laws, the manner in which they are administered and the benefits they afford to the citizens of California were explained to thousands of visitors to the Fair and the exhibits of construction work in both the civil engineers' and the contractors' displays attracted considerable interest.

Other boards who participated in the Department's exhibit, and whose displays attracted throngs of visitors, were the Board of Medical Examiners, Board of Dental Examiners, Board of Optometry, Board of Embalmers and Funeral Directors, Board of Barber Examiners, Board of Cosmetology, Board of Architects, North, and Board of Architects, South.

What the protective laws under which each of these boards operates have accomplished in the way of driving irresponsible and dishonest men and women out of the professions and vocations in California was graphically demonstrated in the various exhibits. It is felt that the results have been extremely gratifying and the efforts expended have proven well worth while.—*Report to Governor's Council, California State Department of Professional and Vocational Standards.*

What Has Caused the Medical Crisis for the White Collar Man?—It is variously attributed to the rise of specialism, the development of new and more expensive methods of diagnosis and treatment and the diminished purchasing power of the dollar. Apparently the cost of modern medical service constitutes the only financial difficulty which requires to be remedied for the great middle class. If there are other economic injustices visited upon them this does not appear in public discussion. They are accustomed to the finer things of life and their appreciation; they apparently can get them to a satisfactory degree; they are expected by their employers and the world at large to live and dress in a genteel manner. They appear able to do this and to be satisfied with their lot until illness appears in the family. Does it not appear strange that the great injustice comes from the hands of a profession, whose rewards have always been measured by the economic condition of the client? Is it not more logical to conclude that in the change of the economic tide the budgetary balance of this whole group of society has been permitted to become too unstable, that there is too little provision for the exigencies of illness, as well as the means for avoiding them which have to be taken into account by all, even by the physician himself?

Perhaps my views in this matter are narrow and colored by my associations. I can only say that I have endeavored to prevent them from becoming so. But certain things seem very clear to me and to the point of being self-evident.

1. Illness and injury are inevitable occurrences in the lives of all human beings in the present state of civilization and industrial organization.

2. Once they have arisen, in those otherwise economically independent, they call for individual attention and the preservation of the right to choose by whom and how this shall be rendered.

3. The cost of medical service under such circumstances should be considered a normal expense for the individual to be foreseen and provided against according to the scale of his living in all of its other implications.

4. There is no economic reason why society should provide this for the individual who is otherwise self-sustaining, in a manner different from that in which his other necessities are provided for.

5. The acknowledgement that such special provision must be made for him is an acknowledgement that his wage fails to sustain him. The remedy should lie, therefore, in the elevation of his earning power and in teaching him how to use it; not in the gift to him of service taken, even in part, from another social group.

6. Provision against such contingencies as we have in mind should constitute a part of his regular budget. It should not require to be balanced by the intervention of the state.

7. It should be possible for the individual to be insured against the expense of illness, in himself or his family; but only in the same way that it is possible for him now to insure against the burning of his house and its contents. This does not mean "health insurance" as it is commonly understood. This usually implies that medical service is furnished him by contract at a low cost. When one's house is destroyed by fire, no one is called upon to replace it at reduced cost. On the contrary, the money is furnished by means of which it may be rebuilt at the prevailing rate for such commodities as may be required. I am no actuary, but I am convinced that insurance against illness could be furnished on the same principle. As a matter of fact, insurance against accident is provided in this manner, at the present time.

8. It is necessary to study not only the cost of medical care for the middle class of our country but rather the general economic situation of this whole class of society.—Albert H. Freiberg, M. D., *Ohio State Medical Journal,* November 1929.

MEDICINE TODAY

This department of California and Western Medicine presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to every member of the California, Nevada and Utah Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

Proctology. — While hemorrhoids have been treated for more than forty years by submucous injections of sclerosing fluids, other important lesions at or near the anal canal are successfully treated by a similar method. This applies to pruritus ani and anal fissure.

If there is a constitutional or definite local cause of itching it can be discovered and will be suitably dealt with. The so-called idiopathic cases lead to great distress, and the treatment can only be symptomatic. A blocking of the sensory nerve supply by injection will accomplish this. The nerves are the inferior hemorrhoidal and the perineal branch of the fourth sacral, and approach the anus from the posterior and posterolateral aspects. Thus Gabriel,[1] using a solution composed of anesthesin 3 per cent, benzyl alcohol 5 per cent and ether 10 per cent in sterilized oil, injects as much as 10 cubic centimeters through four punctures, 2.5 cubic centimeters being used through each point. The analgesic solution leads to relief within a few hours of injection, and numbness may last some weeks during which secondary changes in the skin may be cared for. He suggests that the anterior area be similarly dealt with, the right anterior and the left anterior quadrants each at a week apart. We have ourselves confirmed the beneficial results of this method, using, however, only one puncture in front or behind the anal canal and about two centimeters from the ano-cutaneous margin. This having been touched with tincture of iodin, a 50-millimeter needle is inserted once only and injections made by altering the position of the point of the needle. The solution must be injected deep enough so that no superficial swelling is noticeable afterward. Yeomans[2] and Goldbacher[3] have described recently similar procedures; the former uses benzocain in alcohol and the latter, phenol in oil.

An uncomplicated fissure, especially one of recent origin, may be cured also by the injection of the solution of anesthesin. By "uncomplicated" one means particularly that the fissure has no sentinel pile likely to prevent drainage of the infected wound, no marked induration of its base, and no sinus connecting it with the deeper tissue. If a sentinel pile is present it may be snipped away cleanly; other complications need operative measures to secure drainage. Five cubic centimeters of anesthesin solution may be injected directly into the sphincter, a finger being inserted into the rectum to prevent puncture of the mucous membrane. This secures the relaxation which is necessary to the healing of all fissures, whatever means are employed. The injection may be made from behind, using the same site as in injecting for pruritus. The needle is inserted into the external sphincter muscle laterally and behind in a fan-shaped manner. Two or three injections may be necessary, but the first will relieve pain and spasm remarkably. It is wise to stimulate the raw area by pure ichthyol, phenol, or silver nitrate.

M. S. Woolf, San Francisco.

1 Gabriel, W. B.: The Treatment of Pruritus Ani and Anal Fissure, B. M. J. (Aug. 30), 1930.

2 Yeomans, C. D.: Proctology, D. Appleton and Co., 1929.

3 Goldbacher, L.: Hemorrhoids, the Injection, Treatment and Pruritus Ani, F. A. Davis, Co., 1930.

Healing of Operative Wounds in Syphilitic Patients.—An idea has long been prevalent that operative wounds in syphilitic patients were very apt to show delayed or faulty healing. Considerable statistical evidence has accumulated during recent years which would seem to prove that such a belief is, in general, incorrect. In a very interesting article, Scheffey [1] has studied wound healing in ninety-two syphilitic patients upon whom major gynecologic operations had been performed. As a control series he studied ninety-two patients with negative Wassermann reactions. Surprisingly little difference was noted in the postoperative course or in the wound-healing rate of the two groups.

When all types of wounds were considered the syphilitic patient's wounds healed as rapidly as did those of the normal controls. The average number of postoperative hospital days showed practically no difference in the two groups. This fact also suggested that convalescence was not prolonged by syphilitic infection as manifested by a positive Wassermann reaction. The study revealed that the amount of treatment which had been given to the treated syphilitic patients prior to operation did not materially hasten wound healing in comparison with the untreated group of syphilitics or with the normal controls. The mortality of the two groups was practically the same.

Scheffey favored routine Wassermann reactions on all gynecologic cases and the consideration of the therapeutic problem of each positive case prior to operation rather than indiscriminate routine preoperative specific therapy on all Wassermann positive cases. He believed that "the coöperation of the syphilologist is desirable, helpful, and advisable."

In discussing this paper, Stokes pointed out that the real problem was that of avoiding the incision of an undiagnosed gumma. For although

1 Scheffey, Lewis C.: The Rôle of the Positive Wassermann Reaction Gynecologic Surgery, J. A. M. A., 96:261, No. 4 (Jan. 24), 1931.

an apparently normal operative wound in a syphilitic patient heals readily, the converse is true when a gumma is incised. Incision causes a gumma to spread rapidly, to "cartwheel" out into the surrounding tissue. Stokes favored a single preoperative arsphenamin injection for the protection of the operative surgeon, but warned that before this is given, one should know that the patient is reasonably young and intact and free from cardiovascular and neural involvement. Otherwise a dangerous Herxheimer reaction might occur.

H. J. Templeton, Oakland.

Recovery Oxidation in Muscle.*—We are now in position to discuss perhaps the most important of the respiratory mechanisms of the cell. Under the names of myohematin and histohematin MacMunn,[8 9] in 1886, described a respiratory pigment showing characteristic absorption bands in the spectroscope. This pigment occurred in the muscles and other tissues of almost all kinds of animals. Hoppe-Seyler, however, considered the pigment merely a mixture of derivatives of ordinary hemoglobin, and as Keilin puts it, "Malgré les arguments de MacMunn; l'autorité de Hoppe-Seyler a prévalu, et l'existence de ce pigment est rapidement tombée dans l'oubli." [10]

Keilin showed that this pigment does in fact exist, and that it has an importance which MacMunn did not suspect. It occurs in practically all animal cells, and since it is not a simple hematin, Keilin[10] suggested the name "cytochrome" (cell pigment) instead of myohematin. In general the concentration of cytochrome is greater in the more active tissues. Keilin showed by spectroscopic analysis that cytochrome consists of three components, "a," "b," and "c." These substances readily undergo reversible oxidation and reduction without being destroyed. [11 12]

In living cells cytochrome "a," "b" and "c" are readily reduced by hydrogen of the substrate activated by the several dehydrogenases, while the reduced cytochrome is readily oxidized by oxygen in the presence of the enzyme indophenol oxidase (so-called because besides oxidizing cytochrome it will give the indophenol reaction with "Nadi" reagent). Thus "cytochrome acts as a carrier between two kinds of respiratory enzymes of the cell"; dehydrogenases and oxidases. This constitutes a catalytic five compound system, composed of substrate, dehydrogenase, cytochrome, oxidase and oxygen. Here as in all other biological oxidations, the first step in the oxidation is dehydrogenation.

Cytochrome "a" and "c" are only active in catalytic five compound systems, but cytochrome "b" can serve as part of the catalytic four compound system: substrate, dehydrogenase, cytochrome "b," oxygen. Since cyanides do not interfere with the oxidation of cytochrome "b," it is inferred that this substance can transfer hydrogen directly to molecular oxygen, without the aid of oxidase.

For many years Warburg has emphasized the importance of an iron-containing pigment, the "respiratory ferment," in cellular respiration. This material could be inactivated by cyanides, hydrogen sulphide, carbon monoxide and by heating, and Warburg considered respiration to consist essentially of an activation of oxygen by this ferment. However, the recent studies of Keilin,[11] afford much evidence that the "respiratory ferment" is identical with indophenol oxidase, so that we may write the catalytic five compound system mentioned above as: substrate, dehydrogenase, cytochrome, "respiratory ferment," oxygen. Thus it is as an agent in a dehydrogenation that Warburg's "respiratory ferment" is important in biological oxidation, a conception which introduces unity in the various theories of biological oxidation.

Strong evidence in favor of this view is afforded by the fact that methylene blue can replace oxidase plus oxygen.[6]

While the cytochrome system is perhaps the most important of the hydrogen transporters in the animal cell, it is by no means the only one. The sulphydryl compounds (*e. g.*, glutathione, cystine, cysteine) are important in this connection, and Knoop[13] has recently suggested that a similar rôle may be played by a number of reversible oxidation-reduction systems known to be present, such as the oxy and ketonic acids and the ketonic and amino acids.

The opinion was held until recently that the respiration of animal tissues is almost completely inhibited by cyanides. This view was based on a small number of experiments involving a few types of tissues, and the recent work of Dixon and Elliott[14] has shown that in general it is not true. In a series of studies on many tissues from a wide variety of forms these investigators showed that in some cases the maximum inhibition of respiration effected by cyanide is only 40 per cent, while in others (*e. g.*, yeast) there may be up to 90 per cent inhibition. An average of about 60 per cent was noted.

Some examples are interesting. In rabbit muscle M KCN caused a 74 per cent inhibition, in rat M/30 muscle 63 per cent. The writer observed an 83 per cent inhibition in the case of a frog sartorius.

It is clear that cyanide stable respiratory systems are important in the animal economy. In many cases xanthine oxidase may be the chief factor in such respiration, but where there is no

* Part I of this contribution to this column was printed in the June, 1931, number of California and Western Medicine (page 424).

6 Thundberg, T. Quart. Rev. Biol. v, 318, 1930.

8 MacMunn, C. A. Phil. Trans. Roy. Soc., clxxvii, 267, 1886.

9 MacMunn, C. A. J. of Physiol., viii, 57, 1887.

10 Keilin, D. Reunion Plénière, Société de Biologie, 1927.

11 Keilin, D. Proc. Roy. Soc., B. civ, 206, 1929.

12 Keilin, D. Proc. Roy. Soc., B, civ, 418, 1930.

13 Knoop, F. Science, lxxi, 23, 1930.

14 Dixon, M., and Elliott, K. A. C. Biochem, J., xxiii, 812, 1929.

xanthine oxidase, as in skeletal muscle [15] (p. 366), this moiety of the oxygen consumption must be ascribed to systems other than it, but like it, capable of transferring hydrogen directly to molecular oxygen without intervention by an oxidase. Known examples include the catalytic four compound system substrate, dehydrogenase, cytochrome "b," oxygen; and the catalytic three compound system involving tyramine, tyramine oxidase and oxygen.[16] No doubt there are others.

Several investigators have recently pointed out some interesting consequences of modern views on biological oxidation.[6 17] The oxygen consumed in respiration serves as final hydrogen acceptor in the several dehydrogenation systems, and is thus entirely used in the formation of water. The oxygen contained in the expired carbon dioxide of catabolism is derived from oxygen already present in the several fuel molecules, and from water added to the fuel molecule where double bonds are the consequence of dehydrogenation. After such addition there may be further dehydrogenation followed by splitting off of CO_2.

The events occurring in recovery oxidation in muscle may be briefly outlined in terms of the picture we have drawn. Some substance or substances produced in the active phase of muscular contraction evoke recovery. The dehydrogenation mechanisms of the cell will oxidize any substance of suitable redox potential (Clark) and molecular configuration,[18] and accordingly the chain of reactions responsible for dehydrogenation will be evoked on the appearance of such a body. Recovery oxidation is thus a consequence of the production of proper substrate during contraction. That neither nervous nor hormonal factors are essential is indicated by the fact that recovery oxidation occurs in the excised skeletal muscle preparation.

It should be noted that energy for anabolism (the restorative reactions of recovery) is obtained from further catabolism. According to Hill and Meyerhof, some 20 per cent of the lactic acid formed in contraction is oxidized to carbon dioxide and water, yielding energy which is responsible both for the recovery heat production and for the resynthesis of lactic acid to glycogen. Conant and Tongberg[19] have recently suggested a probable chemical path for this resynthesis.

In conclusion we note that the views of Wieland and of Warburg have been integrated, largely by the work of the Cambridge School, into a picture which is not the original view of either, and which is notably different from the conventional picture of a decade or so ago. One may comment on this situation by quoting from the "Premiere Mémoire sur la Respiration des Animaux" of Lavoisier. . . . "These modifications of earlier views cost nothing to those who search for the truth for its own worth, and without any other ambition than to find it. Moreover, we do not believe, far as we are from the elimination of uncertainty, that [our] theory of respiration will leave nothing to be desired." [20]

JOHN FIELD, 2ND., Stanford University.

15 Dixon, M. Biol. Rev., iv, 352, 1929.
16 Hare, M. L. C. Biochem. J., xxii, 968, 1928.
17 Martin and Weymouth. Elements of Physiology, p. 48, 1928.
18 Fromageot. Comp. Rend., clxxxii, 1240, 1926.
19 Conant and Tongberg. J. Biol. Chem., lxxxviii, 701, 1930.

20 Oeuvres de Lavoisier. Tome II, 688, 1789.

Vaccination.—As the time approaches for the consideration of desirable public health legislation, the question of the wisdom of presenting bills to improve the vaccination law will come up for decision.

The arguments founded on existing conditions are growing stronger because the United States Public Health Service has stated that during ten months of the current year about 40,700 cases of smallpox have been reported in this country, whereas during the corresponding period of last year about 28,000 cases were recorded. Even the larger figures probably do not make the situation sufficiently impressive because it is well known that all cases are not reported.

The United States and British India report a larger incidence of smallpox than any other country. Records show that since 1925 there has been a gradually increasing number of cases, the figures for 1926 being 33,732, those for 1927 show an increase of 3760; 1928 had 39,396; and 1929 had 42,282 cases. The cases to be reported in the remainder of 1930, according to precedent, will probably make the total exceed the figures for 1929. The rates of incidence in smallpox show that the 1926 figures are .288 per 1000 of the population and the 1929 figures are .348.

Even available statistics may be very misleading, for in the districts from which reports are not made regularly, or in some cases not made at all, are the districts where smallpox is most prevalent.

It is in these sections where the greatest carelessness with respect to prevention prevails. It may be that there are twice as many cases of the disease as are reported. It is not improbable that taking into account the average life expectancy, it might be that one person in twenty-five is likely to have an attack of smallpox during his lifetime.

Although the mortality from smallpox is less than one per cent at the present time, history has shown that different epidemics have varying mortality rates and the development or importation of some virulent strain might bring about a mortality of 30 per cent.

Our protection consists in vaccination, and the records show that at continental and insular stations and at foreign ports there were 203,388 persons vaccinated last year. This large group acts as a protective barrier against the disease, and added to this are the persons vaccinated because of belief in the efficacy of the procedure and those who are vaccinated under state laws.

The protective power of vaccination is diminished in proportion to the number of unvaccinated people in a community. In Massachusetts there are two weak places in the chain: first, in the number of pupils in private schools where vaccination is not required, and second, among the cases certified by physicians as unsuitable for vaccination.

The greatest advance would follow vaccination of all infants, and revaccination at regular intervals thereafter.—*New England Journal of Medicine*, December 4, 1930.

Freud Wins Goethe Prize.—Professor Sigmund Freud, world-famous psychiatrist and scientist, was made the recipient of the Goethe prize, the greatest scientific and literary distinction in Germany. The prize was given to Doctor Freud at ceremonies in Frankfurt at the end of August.—*The Journal of Nervous and Mental Disease*, September 1930.

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION*

JUNIUS B. HARRIS.....President
JOSEPH M. KING.....President-Elect
EMMA W. POPE.....Secretary

OFFICIAL NOTICE

Fall Meeting of the Council.—The next meeting of the Council of the California Medical Association will be held at the Hotel Huntington, Pasadena, on September 26, 1931.

COUNCIL MINUTES*

Adjourned Meeting of the Council of the California Medical Association

(Two Hundredth Meeting—Part I)

Approved at the Two Hundred and Second Meeting of the Council of the California Medical Association, May 23, 1931

Held in Room 126 of the Fairmont Hotel, San Francisco, Tuesday, April 28, 1931, at 2 p. m.

Present.—Doctors Kinney, Harris, Pallette, Hamlin, Arnold, Duffield, DeLappe, Peers, Phillips, Rogers, Hunter, Cushman, Kiger, Catton, Kelly, Ewer, Kress, Pope, and General Counsel Peart.

Absent.—Doctors Moseley and Coffey.

1. **Call to Order.**—The meeting was called to order by the chairman, Oliver D. Hamlin.

2. **Adjournment.**—On motion duly made, seconded and carried, the meeting adjourned to meet at 2 p. m. Wednesday.

OLIVER D. HAMLIN, *Chairman.*
EMMA W. POPE, *Secretary.*

* * *

Minutes of the Two Hundredth Meeting of the Council of the California Medical Association

(Adjourned Meeting—Part II)

Approved at the Two Hundred and Second Meeting of the Council of the California Medical Association, May 23, 1931

Held in Room 126 of the Fairmont Hotel, San Francisco, Wednesday, April 29, 1931, at 2 p. m.

Present.—Doctors Kinney, Harris, Pallette, Hamlin, Arnold, Duffield, DeLappe, Phillips, Rogers, Hunter, Cushman, Kiger, Catton, Kelly, Ewer, Kress, Pope, and General Counsel Peart.

Absent.—Doctors Moseley, Coffey, and Peers.

1. **Roll Call.**—The meeting was called to order by the chairman, Oliver D. Hamlin.

2. **Medical Service.**—Dr. Daniel Crosby of Oakland reported on the personnel and activities of the Co-operative Medical Service, Incorporated, a new health organization of San Francisco.

Doctor Crosby then outlined the plan of insurance hospital service of the Baylor University of Texas. It was the sense of the Council that the correspondence on the insurance hospital plan outlined by Doctor Crosby be obtained for the Association files.

3. **Extension Service.**—Dr. Langley Porter, dean of the University of California, outlined the plan of the University for carrying on postgraduate instruction, consultation service, and education of the public through county medical societies. Doctor Porter stated that the University desired to work in coöperation with the Association.

Action by the Council.—On motion of Duffield, seconded by Kiger, the following resolution was adopted:

Resolved, That the Committee on Extension Lectures be instructed to coöperate with Doctor Porter and proceed with the carrying out of the plan outlined as soon as possible.

Doctor Porter suggested that the service be definitely brought to the attention of the county societies.

Action by the Council.—On motion of Kress, duly seconded and carried, the following resolution was adopted:

Whereas, The Medical School of the University of California has worked out a plan for postgraduate medical work and courses which would be carried on in coöperation with component county societies, and which plan commends itself to the Council of the California Medical Association for its excellent features; now, therefore, be it

Resolved, By the Council that it endorse the plan and request the fullest coöperation of the State Association officers and of the officers and members of the component county medical societies of the California Medical Association.

4. **Public Health Exhibit.**—Dr. Fred B. Clarke, chairman of the Committee on Public Health and Instruction, outlined the plan for a public health exhibit as included in the report of the committee published in the *Pre-Convention Bulletin.* Doctor Clarke stated that he felt it would be necessary to have some one individual handle the exhibit, collect information therefor and arrange for speakers and the proper presentation of the exhibit at the various fairs.

Action by the Council.—On motion of Duffield, seconded by Arnold, the following resolution was adopted:

Resolved, That it be the sense of this Council that the Committee on Public Health and Instruction, together with the Committee on Extension Lectures, proceed with the preparation of a program for such exhibit as indicated by Doctor Clarke and, further, that the Council authorize payment of the railroad fare of members of such committees for such conference as is necessary to formulate the plan.

5. **Clinical and Research Prize Contest.**—Dr. George Dock, chairman of the Committee on Clinical and Research Prizes, submitted the following report:

"The Committee on Prize Essays recommends that the Clinical Prize be awarded to the author who signs himself 'Ambrose Paré,' for the paper on 'The Effects of Incidental Head Surgery in the Course of Pulmonary Tuberculosis.'

"The Committee recommends that the Research Prize be awarded to the author who signs himself 'René Théophile,' for the paper entitled 'Meningeal Allergy in Tuberculosis.'

"The paper on 'The Narrow Bispinous Diameter' by Baudelocque receives honorable mention.

"The usual rules shall apply to the publication of prize essays."

The secretary stated that the paper by "Ambrose Paré" was written by Eleanor Seymour, Olive View;

* For a complete list of general officers, of standing committees, of section officers, and of executive officers of the component county societies, see index reference on the front cover, under Miscellany.

* For other minutes of the Council, of meetings held during the sixtieth annual session at San Francisco, April 27-30, 1931, see June 1931 California and Western Medicine, page 451.

the paper by "René Théophile" by Eugene Ziskind and Esther Somerfeld, Los Angeles; and the paper by "Baudelocque" by Samuel Hanson, Stockton.

It was felt that the editors should stress this contest during the year in the JOURNAL.

Discussion was then had of the rules governing the contest, and on motion of Catton, duly seconded, the following resolution was adopted:

Resolved, That the Executive Committee have called to its attention for study and report back to the Council the rules regarding the matter of identity of authors of papers submitted on section programs and for the prize award and that it consider whether or not a certain number of papers be submitted before a prize award is made in the contest.

6. **Birth Control.**—Publication of details of this item will be made in due time.

7. **Annual Meeting.**—Discussion was had of the place of the next annual meeting. Invitations to hold the meeting at the Huntington Hotel, Pasadena, and the Ambassador Hotel, Los Angeles, were presented.

After discussion on motion duly made and seconded, the following resolution was adopted:

Resolved, That it be left to the decision of the House of Delegates as to whether the meeting be held at the Huntington or the Ambassador hotels.

8. **Legislation.**—Discussion was had of the advisability of having Doctor Harris present a short talk on legislation before the House of Delegates. It was the sense of the Council that Doctor Harris should speak before the House while the Reference Committee was acting on new resolutions if the House authorized the change in the order of business.

Discussion was had of certain correspondence presented by Doctor Hunter, and the desirability of raising the standards of certain medical offices throughout the state.

Action by the Council.—On motion of Kelly, seconded by Catton, the following resolution was adopted:

Resolved, That the Committee on Medical Education and Hospitals be instructed to work up a set of standards which should govern the California Medical Association for positions in the medical institutions in the State of California to the end that this matter may be made public so that the attitude of the Association may be known and that the Council after adopting this group of standards can then proceed to put them into effect.

Doctor Hunter asked that the secretary be instructed to reply to Mr. Murphy. No objection.

9. **Minutes of the Council.**—Minutes of the 199th meeting of the Council were read.

The item covering disposition of letter from the Los Angeles County Medical Association regarding the Medical Health Service of Los Angeles was called to the attention of the Council.

Action by the Council.—On motion of Pallette, seconded by Cushman, the following resolution was adopted:

Resolved, That the correspondence from the Los Angeles County Medical Association regarding the Medical Health Service be reconsidered.

Action by the Council.—After discussion, on motion of Pallette, seconded by Kinney, it was

Resolved, That the matter be referred to the general counsel for his opinion and that the secretary of the Association notify the Los Angeles County Medical Association of such action.

Action by the Council.—On motion of Kelly, seconded by Kinney, it was

Resolved, That the minutes of the 199th meeting of the Council be approved.

10. **Adjournment.**—There being no further business to come before the Council, the meeting adjourned to meet at 10 a. m. Thursday in the same place.

OLIVER D. HAMLIN, *Chairman.*
EMMA W. POPE, *Secretary.*

Minutes of the Two Hundred and First Meeting of the Council of the California Medical Association

Approved at the Two Hundred and Second Meeting of the Council of the California Medical Association, May 23, 1931

Held in Room 126, Fairmont Hotel, San Francisco, Thursday, April 30, 1931, at 10 a. m.

Present.—Doctors King, Harris, Pallette, Hamlin, Arnold, Duffield, Ullmann, DeLappe, Phillips, Peers, Schaupp, Rogers, Hunter, Cushman, Kiger, Catton, Kelly, Reinle, Kress, Pope, and General Counsel Peart.

Absent.—None.

1. **Call to Order.**—The meeting was called to order by the vice-chairman, T. Henshaw Kelly.

2. **Reorganization of the Council.**—Doctor Kelly stated that the first order of business would be the election of a chairman for the ensuing year.

3. **Election of Chairman of the Council.**—Oliver D. Hamlin was nominated by William Duffield, seconded by Ruggles Cushman, as chairman of the Council for the ensuing year.

On motion of Peers, seconded by Rogers, the secretary pro tem, Emma W. Pope, was instructed and did cast the ballot of all members of the Council for Dr. Oliver D. Hamlin as chairman of the Council for the ensuing year. Doctor Hamlin then took the chair.

4. **Election of Vice-Chairman.**—T. Henshaw Kelly was nominated by Edward M. Pallette, seconded by William Duffield, as vice-chairman of the Council for the ensuing year.

On motion of Rogers, seconded by DeLappe, the secretary pro tem was instructed and did cast the ballot of all members of the Council for Doctor Kelly, and the chairman announced the election of Doctor Kelly as vice-chairman of the Council for the ensuing year.

5. **Election of Secretary-Treasurer.**—Emma W. Pope was nominated by George G. Hunter, seconded by Robert Peers, as secretary-treasurer of the Association for the ensuing year.

On motion of Duffield, seconded by Pallette, the chairman was instructed and did cast the ballot of all members of the Council for Doctor Pope and announced the election of Emma W. Pope as secretary-treasurer for the ensuing year.

6. **Election of Editor.**—George H. Kress was nominated by Robert A. Peers, seconded by Edward M. Pallette, as editor of the JOURNAL for the ensuing year.

On motion of Duffield, seconded by Kelly, the secretary was instructed and did cast the ballot of all members of the Council for Doctor Kress, and the chairman announced the election of Doctor Kress as editor of the JOURNAL for the ensuing year.

7. **Associate Editor.**—Emma W. Pope was nominated by Henry S. Rogers, seconded by E. M. Pallette, as associate editor of the JOURNAL for the ensuing year.

On motion of Cushman, seconded by Peers, the chair was instructed and did cast the ballot of all members of the Council for Doctor Pope and announced the election of Doctor Pope as associate editor for the ensuing year.

8. **Appointment of General Counsel.**—On motion of Peers, seconded by Pallette, and unanimously carried, the following resolution was adopted:

Resolved, That Hartley F. Peart be appointed General Counsel of the California Medical Association for the ensuing year.

9. **Appointment of Associate General Counsel.**—On motion of Pallette, seconded by Rogers, and unanimously carried, the following resolution was adopted:

Resolved, That Hubert Morrow be appointed associate general counsel for the ensuing year.

10. **Committee on Clinical and Research Prizes.**—The secretary stated that the term of Eugene Kilgore had expired as a member of the Committee on Clinical and Research Prizes.

Action by the Council.—On motion of Rogers, seconded by Pallette, and unanimously carried, the following resolution was adopted:

Resolved, That Eugene Kilgore be reappointed as a member of the Committee on Clinical and Research Prizes for a term of three years.

11. **Members of Standing Committees.**—The chairman stated that the next order of business would be the appointment of members of standing committees.

Discussion was then had as to the appointment of members of the various committees, whose terms had expired. Attention was called to the Council provision whereby all councilors who were members of standing committees would resign each year so that councilors could serve on committees in which they were particularly interested.

Action by the Council.—On motion of Catton, seconded by Rogers, the following resolution was adopted:

Resolved, That each of the councilors who is serving on a standing committee by virtue of being a councilor has now resigned and it be so written in the minutes.

Separate elections were then held to fill vacancies on all standing committees and the personnel of the various standing committees were announced to be as follows:

STANDING COMMITTEES

Committee on Associated Societies and Technical Groups

R. Manning Clarke, Los Angeles....1934
Harold A. Thompson, San Diego....1932
William Duffield, Los Angeles....1933

Committee on Extension Lectures

Robert T. Legge, Berkeley....1934
James F. Churchill, San Diego....1932
Robert A. Peers, Colfax....1933

Committee on Health and Public Instruction

Langley Porter, San Francisco....1934
Fred B. Clarke, Long Beach....1932
Henry S. Rogers, Petaluma....1933

Committee on Industrial Medicine

Daniel Crosby, Oakland....1934
Packard Thurber, Los Angeles....1932
Mott H. Arnold, San Diego....1933

Committee on Hospitals, Dispensaries, and Clinics

Karl Schaupp, San Francisco....1934
John C. Ruddock, Los Angeles....1932
Gayle G. Moseley, Redlands....1933

Committee on Medical Economics

Lyell C. Kinney, San Diego....1934
John H. Graves, San Francisco....1932
Ruggles A. Cushman, Santa Ana....1933

Committee on Medical Education and Medical Institutions

H. A. L. Ryfkogel, San Francisco....1934
George Dock, Pasadena....1932
George G. Hunter, Los Angeles....1933

Committee on Medical Defense

Henry Snure, Sr., Los Angeles....1934
George G. Reinle, Oakland....1932
Fred R. DeLappe, Modesto....1933

Committee on Membership and Organization

LeRoy Brooks, San Francisco....1934
Harlan Shoemaker, Los Angeles....1932
Jesse W. Barnes, Stockton....1933
The Secretary....Ex-officio

Committee on History and Obituaries

George Lyman, San Francisco....1934
Charles D. Ball, Santa Ana....1932
Emmet Rixford, San Francisco....1933
The Secretary....Ex-officio
The Editor....Ex-officio

Committee on Publications

Percy T. Magan, Los Angeles....1934
Morton R. Gibbons, San Francisco....1932
Frederick Gundrum, Sacramento....1933
The Secretary....Ex-officio
The Editor....Ex-officio

Committee on Public Policy and Legislation

William Duffield, Los Angeles....1934
Junius B. Harris (Chairman), Sacramento....1932
Joseph Catton, San Francisco....1933
The President....Ex-officio
The President-Elect....Ex-officio

Committee on Scientific Work

Lemuel P. Adams, Oakland....1934
Karl Schaupp, San Francisco....1932
F. M. Pottenger, Monrovia....1933
Emma W. Pope (Chairman)....Ex-officio
R. Manning Clarke, ex-officio, as Secretary General Medicine Section, Los Angeles....1932
Stanley H. Mentzer, ex-officio, as Secretary General Surgery Section, San Francisco....1932

Committee on Clinical and Research Prizes

Eugene S. Kilgore, San Francisco....1934
Emmet Rixford, San Francisco....1932
George Dock, Pasadena....1933

12. **Woman's Auxiliary.**—Doctor Pallette then introduced Dr. C. R. Howson, president of the Los Angeles County Medical Association, to the Council and stated that the Woman's Auxiliary had requested that two resolutions be introduced at the second meeting of the House of Delegates; but since the house ruled that no new business should be introduced at that meeting, he now wished to have the Council's action on the resolutions.

Action by the Council.—On motion of Catton, seconded by Kelly, the following resolution was adopted:

Resolved, That Doctor Howson be given the privilege of the floor.

Doctor Howson then presented the following resolution:

Whereas, The Committee on the Costs of Medical Care was called into being to study the social and economic problems arising from the increasing costs of illness; and

Whereas, The interest of the public is increasing, due largely to the increasing number of articles in lay periodicals, the tone of most of which is derogatory to the medical profession; and

Whereas, The public is also becoming increasingly interested in the work of the Committee on the Costs of Medical Care, because of the publicity given its studies and reports, which publicity is expected to greatly increase during the balance of the term of the studies; and

Whereas, These studies, which we heartily endorse, are understood to include not only the cost of medical care, but also the cost of dental care, of hospital care, of nursing care, of drugs, and even of burial; and

Whereas, These and other studies have shown that the cost of medical care comprises one-third or less of the actual cost of illness; and

Whereas, Because of the name of this committee there is being fostered in the minds of the public the idea that physicians, either directly or indirectly, are chiefly if not altogether responsible for the high and increasing costs of illness; which idea we believe to be resulting in far-reaching and irreparable damage to the prestige of the medical profession; and

Whereas, The Committee on the Costs of Medical Care was "organized to study the economic aspect of the care and prevention of illness"; now, therefore, be it

Resolved, That the Council of the California Medical Association go on record as being of the opinion that, in justice to the physicians of the nation, the name of this committee should, before issuance of further publications, be changed to eliminate the term "medical care," substituting therefor some such term as "illness," or "the care and prevention of illness," as the committee may see fit; and be it further

Resolved, That we respectfully petition the chairman and members of that committee to take action to this end immediately.

Action by the Council.—On motion of Pallette, seconded by Cushman, the following resolution was adopted:

Resolved, That the resolution as read by Doctor Howson be adopted.

Doctor Howson then read a second resolution. It was felt that the words "consideration and endorsement" should be inserted in the resolution. The resolution then read:

Whereas, This body has gone on record as favoring and urging a change of the name of the Committee on the Costs of Medical Care by elimination of the term "medical care" and the substitution of some such term as "illness" or "the care and prevention of illness"; be it

Resolved, That our delegates are hereby instructed to present this matter to the House of Delegates of the American Medical Association at its annual meeting in Philadelphia this year, to the end that it may receive their consideration and endorsement.

Action by the Council.—On motion of Kelly, seconded by DeLappe, the following resolution was adopted:

Resolved, That the resolution as amended be adopted.

13. **Auditing Committee.**—In accordance with constitutional provision, the chairman stated that he had appointed as the Auditing Committee for the ensuing year, T. Henshaw Kelly (chairman), Karl Schaupp, and Joseph Catton. Such appointment was approved by the Council.

14. **Arrangements Committee.**—Discussion was then had of the appointment of members of the Arrangements Committee for the 1932 annual session. It was the sense of the Council that Doctors Pallette, Duffield, Kiger, King, and Hunter be constituted a committee with power to act in the appointment of an Arrangements Committee for the next annual session.

15. **Councilor Visits.**—The question of topics for discussion by councilors during visits to county societies was brought up.

Action by the Council.—On motion duly made and seconded, the following resolution was adopted:

Resolved, That the chairman of the Council appoint a committee of three to formulate a plan of procedure and report to the Council.

16. **Council Meeting.**—It was pointed out that the annual meeting of the members and directors of The Trustees of the California Medical Association, of which all officers and councilors are members, would be held on May 23, 1931.

Action by the Council.—On motion of DeLappe, seconded by Hunter, the following resolution was adopted:

Resolved, That the next meeting of the Council be held at San Francisco on Saturday, May 23, 1931, immediately after adjournment of the meeting of The Trustees of the California Medical Association.

17. **Financial Reports.**—Doctor Kelly stated that he had been asked by Doctor Day of Los Angeles to present a resolution regarding financial reports for action by the Council. Doctor Kelly then read the resolution, which was discussed by members.

Action by the Council.—On motion of Hunter, seconded by Ullmann, the following resolution was adopted:

Resolved, That the resolution be adopted with the provision that it be amended by Doctor Kelly and Mr. Peart to include the suggestions of the Council.

It was felt that a written statement should accompany such reports stating that the information was for the confidential use of officers and members of the county societies only.

The resolution as amended read as follows:

Resolved, That upon the written request of the president or the secretary or the Board of Directors or Council (which request shall be evidenced by resolution adopted by majority vote of such Board of Directors or Council) of any component county society of this Association, the secretary-treasurer of this Association shall forward by registered mail or express to the office of such component county society a copy of any monthly financial statement or annual audit of accounts of the Association for the confidential information of the directors or councilors and officers and members of such component society; and be it further

Resolved, That in transmitting such documents upon such request the secretary-treasurer advise the officers of such component county society that said copy be kept at the office of said component county society, and that said documents and the contents thereof are for the confidential use and information of the directors or councilors, officers and members of such component county society, and request that no copies thereof be made and that no publicity be given to any of the contents thereof.

18. **Salaries.**—Doctor Kelly then stated that a discussion of the salaries authorized in the budget would be had. Doctors Kress, Pope, and Mr. Peart retired.

Discussion was then had of the salaries of the editors. Doctor Kelly stated that he had discussed the work of the editors with Doctor Pope and that she had been agreeable to a reduction in salary as associate editor. Doctor Kelly stated that as associate editor it would be Doctor Pope's duty to do the routine office work connected with the JOURNAL and that Doctor Kress would assume the full responsibility as editor of the official JOURNAL.

Action by the Council.—On motion of Kelly, seconded by Duffield, the following resolution was adopted:

Resolved, That the salary of the editor be fixed at $5000 for the ensuing year.

Action by the Council.—On motion of Kelly, seconded by Duffield, the following resolution was adopted:

Resolved, That the salary of the associate editor be fixed at $2400 for the ensuing year.

Action by the Council.—On motion of Kelly, seconded by Cushman, the following resolution was adopted:

Resolved, That the salary of the secretary-treasurer be fixed at $3600 for the ensuing year.

Action by the Council.—On motion of Kelly, seconded by Peers, it was

Resolved, That the retainer of the general attorney for the California Medical Association be fixed at $4000 for the ensuing year.

It was pointed out that the retainer of Mr. Peart for Optional Medical Defense would remain as previously set, $1000; and that of Mr. Morrow as previously set, $500.

Action by the Council.—On motion of Kelly, seconded by Hunter, the following resolution was adopted:

Resolved, That the retainer of the associate general counsel for the California Medical Association be fixed at $500 for the ensuing year.

Doctor King called the attention of the Council to the recommendation of the Reference Committee that all papers refused by the JOURNAL should be signed by the Publication Committee.

19. **Cancer Commission.**—Doctor Harris stated that he had appointed as members of the Cancer Commission authorized by the House of Delegates Charles A. Dukes, chairman; Lyell C. Kinney, vice-chairman; Alson R. Kilgore, secretary; Harold Brunn, William Ophüls, Henry J. Ullmann, Orville Meland, A. Herman Zeiler, and Clarence Toland.

Action by the Council.—On motion of Ullmann, seconded by Pallette, it was

Resolved, That the officers and members of the Cancer Commission as submitted by Doctor Harris be approved.

Action by the Council.—On motion of Catton, seconded by Duffield, the following resolution was adopted:

Resolved, That the Cancer Commission on organization be requested to submit to the Executive Committee a statement of its needs in line with the resolution passed by the House of Delegates.*

20. **Adjournment.**—There being no further business the Council adjourned.

OLIVER D. HAMLIN, *Chairman.*
EMMA W. POPE, *Secretary.*

* Editor's Note.—The House of Delegates resolution was printed on page 432 (XIV, Item b), and the Reference Committee Report thereon was printed in the June 1931 number of California and Western Medicine, as Item IX, b (page 436).

COMPONENT COUNTY SOCIETIES

CONTRA COSTA COUNTY

The regular meeting of the Contra Costa County Medical Society was held June 9 at Carquinez Hotel, Richmond, with the president, Dr. W. A. Rowell, in the chair.

The minutes of the previous meeting, held in Martinez, were read and approved. A copy of the resolutions passed at that meeting and forwarded to the Board of Supervisors and the County Public Health Association was also read. The application of Dr. J. Roger U. Campbell for admission to membership into the society was unanimously voted. Our delegate to the recent convention of the State Medical Association, Dr. U. S. Abbott, gave a very interesting report of the proceedings of these sessions.

Owing to the inability of the invited speaker, Dr. L. L. Stanley, to be present, two of his associates, Doctors W. P. Goddard and J. O. Hawkins, read the results of Doctor Stanley's investigations. Three papers were presented as follows:

"The Effect of Coffee Drinking on Sleep," read by Doctor Goddard and illustrated by lantern slides.

"The Administration of Testicular Substance to Goldfish," also read by Doctor Goddard.

A demonstration of the criminal type in a paper entitled "Twenty-Five Prisoners," read by Doctor Hawkins.

Following the discussion of these various papers the meeting adjourned for the usual light refreshments. In the absence of the regular secretary, Dr. C. O. Bishop discharged the function of this office in a very able manner. Further meetings of the society will be suspended until September.

L. H. Fraser, *Secretary.*

RIVERSIDE COUNTY

At the last meeting of the Riverside County Medical Society, held June 8, the following resolution was unanimously adopted:

Whereas, It has become necessary to chronicle the tragic death of our friend and colleague, Dr. Will H. Holmes and his wife, Louise, we desire at this time to pay tribute to their worth and express our profound sorrow at their untimely passing.

Will H. Holmes was a worthy representative of our profession in every respect. He was a loyal friend, a useful citizen, and a christian gentlemen. Mrs. Holmes was a devoted wife and mother, and a very public-spirited and useful woman.

Our society, the Community Hospital staff, their church, his club, and their community have all been enriched by their lives.

We desire to express our sincere sympathy to Mary Louise and their other loved ones in this time of bereavement which we share with them in no small degree.

T. A. Card, *Secretary.*

SACRAMENTO COUNTY

The regular May meeting of the Sacramento Society for Medical Improvement was held at the Elks' Club on Tuesday evening, May 19, at 8:30 o'clock.

Sixty-two members were present.

The meeting was called to order by the president, Dr. Philip G. Young. The minutes of the last meeting were read and approved.

There being no case reports, the president introduced Dr. LeRoy C. Abbott, professor of orthopedics, University of California Medical School, as the speaker of the evening.

Doctor Abbott's paper dealt with the treatment of crippling conditions in childhood and with special reference to leg-lengthening. The apparatus used in leg-lengthening was described in detail, and the superiority of the four-pin method over the older two-pin method demonstrated. To make his paper clear, Doctor Abbott showed moving-picture films on the screen. These pictures made the operative procedure easier to visualize. Many crippling conditions were pictured before and after operation, and some of the results were little short of marvelous.

Doctors Haig and Wallerius voiced their appreciation of this interesting paper.

Frank Warne Lee, *Secretary.*

SAN BERNARDINO COUNTY

The regular meeting of the San Bernardino County Medical Society was held at Patton on June 2.

Dinner was served at 7 p. m., there being ninety-two members and guests present.

Grace was said by the Rev. Dr. Ide of the Congregational Church in Redlands.

After dinner Doctor Webster opened the meeting at 7:50, introducing Dr. J. M. Toner, director of state institutions, who gave a very interesting talk on the subject of the various institutions under his direction.

Dr. H. Hill then introduced Dr. G. Porter of the State Department of Health, who spoke on "Whole-Time Health Officers," following which Dr. C. G. Hilliard, chairman of this committee, made a resolution that the San Bernardino County Medical Society go on record as favoring a full-time health officer. Dr. A. T. Gage seconded this resolution.

The meeting place was then changed to the assembly hall for the business and scientific program of the evening.

The scientific program was presided over by Doctor Webster.

A paper on "The Treatment of Paresis and Allied Conditions" was presented by Dr. F. H. Garrett. Discussion by Dr. G. M. Webster and members of the staff followed.

The next paper, "Dementia Praecox and Schizophrenia" by Dr. F. F. Williams, was discussed by Doctor Pond and the staff.

At the conclusion of this program a motion was made by Dr. C. G. Hilliard on behalf of the San Bernardino County Medical Society and seconded by Dr. W. W. Roblee on behalf of the Riverside County Medical Society thanking Doctor Webster for a most enjoyable and instructive evening.

E. J. Eytinge, *Secretary.*

SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was held Thursday evening, May 7, at 8:30 o'clock, in the Medico-Dental clubrooms, 242 North Sutter Street, Stockton. Dr. G. H. Rohrbacher, president, presiding.

The minutes of the previous meeting and those of a special meeting of the board of directors, held on May 5, were also read and approved.

Dr. J. W. Barnes, delegate, read a report of the state convention held at San Francisco. Dr. Barton Powell added a further report covering the section meetings of the eye, ear, nose, and throat group.

The first paper of the evening was read by Dr. S. F. Priestley on "Pre- and Postoperative Treatment." Doctor Chapman opened the discussion.

A paper entitled "Strabismus From the Standpoint of General Medicine" was read by Dr. Dohrmann K. Pischel of San Francisco. Another paper, "Nasal Sinus Disease From the Standpoint of General Medicine," was read by Dr. Harold A. Fletcher of San Francisco. Both papers were opened for discussion by Barton Powell, Sr., followed by Doctors Hanson, Priestley, Broaddus, Barton Powell, Jr., Sheldon and Sanderson.

There being no further business the meeting was adjourned and refreshments served.

C. A. Broaddus, *Secretary.*

VENTURA COUNTY

The regular monthly meeting of the Ventura County Medical Society was held Tuesday, May 12, at the Ventura County Clinic building. The meeting was called to order by Doctor Smolt, vice-president.

Members present were: Doctors Achenbach, Bardill, Bianchi, Mosher, Welch, Hendricks, Rhymes, Smolt, R. M. Jones, Wright, W. S. Clark, Felberbaum, D. G. Clark, Armitstead.

Doctor Clark gave his report on the state medical convention held at San Francsico, commenting especially on the activities of the cancer work, and also the resolution which advocated dropping the requirements of active training for reserve medical officers.

Doctor Langley presented a paper on cardiac pain, with special reference to coronary sclerosis, coronary thrombosis, and angina pectoris. The paper was well received.

R. B. ARMITSTEAD, *Secretary.*

CHANGES IN MEMBERSHIP

New Members

Alameda County—Hermon Adler, Harry Christie Aitken, Ina Gourley, Sidney N. Parkinson, Harry McKay Pier, Arthur L. Teeter.

Contra Costa County—Robert J. P. Harmon, John B. Spalding.

Fresno County—Jasper McAdory Humphreys.

Los Angeles County—

Vestal Rand Abraham
William C. Bruff
Marjorie B. Burnham
Wells Clifford Cook
Wilbur Jonathan Cox
Ben R. Dysart
Robert J. Ertel
Theodore Herzl Goldman
Charles Michael Hayes
Joseph D. Heitger
Lester O. Houghten
Joseph Herbert Marks
Nestor A. Michelena
Erwin Douglas Pratt
William Russell Quinn
Stephen T. Ragan
Frederick P. Shafer
Walter James Sullivan

Monterey County—Margaret Swigart.

Orange County—Rodes Estill Yager.

Riverside County—Newman Kennedy Bear, Berryman Green, Jr.

Sacramento County—Enichi Yamao.

San Bernardino County—John Asher Wallace, Rodney Frederick Wood.

San Diego County—Charles W. Rees, E. Minton Fetter, Einor H. Christopherson.

San Francisco County—Dorothy J. Starks, Oscar F. Nolan, Caleb Clifford Hedberg, James K. Hazel.

San Mateo County—Joseph M. Dallal.

Siskiyou County—William C. McBride, Jr.; D. D. Todorovic.

Stanislaus County—Oscar J. Hansen.

Transfers

Adolph B. Baer, from San Francisco to San Mateo County.

Arthur N. Donaldson, from Santa Clara to Los Angeles County.

Samuel C. Glassman, from Kern to Los Angeles County.

Marion O. Hooker, from San Francisco to Santa Barbara County.

James W. Morgan, from Stanislaus to San Francisco County.

Eva M. Shively, from Sacramento to Ventura County.

Raymond E. Tatro, from Los Angeles to San Bernardino County.

Deaths

Deal, Louise Bacon. Died at San Francisco, June 16, 1931, age 66 years. Graduate of Cooper Medical College, San Francisco, 1894. Licensed in California, 1894. Doctor Deal was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Holmes, Will Hammond. Died at Riverside, June 5, 1931, age 44 years. Graduate of Northwestern University Medical School, Chicago, 1911. Licensed in California, 1912. Doctor Holmes was a member of the Riverside County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Lewitt, Frederick Clinton. Died at San Francisco, June 16, 1931, age 48 years. Graduate of University of California Medical School, San Francisco, 1908. Licensed in California, 1908. Doctor Lewitt was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Moseley, Gayle Graham. Died at Redlands, June 17, 1931, age 57 years. Graduate of Kentucky School of Medicine, Louisville, 1894. Licensed in California, 1899. Doctor Moseley was a member of the San Bernardino County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Northrup, Fred Detmar. Died at South Pasadena, June 7, 1931, age 56 years. Graduate of Kansas City Hahnemann Medical College, 1904. Licensed in California, 1914. Doctor Northrup was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

THE WOMAN'S AUXILIARY OF THE CALIFORNIA MEDICAL ASSOCIATION*

National Officers of Woman's Auxiliary

President—Mrs. Arthur B. McGlothlan, St. Joseph, Missouri. (Elected last year.)

President-elect — Mrs. Walter Jackson Freeman, Philadelphia, Pennsylvania.

First vice-president—Mrs. James Blake, Hopkins, Minnesota.

Second vice-president—Mrs. James F. Percy, Los Angeles, California.

Third vice-president—Mrs. J. Ralston Wells, Daytona Beach, Florida.

Fourth vice-president—Mrs. Robert W. Tomlinson, Wilmington, Delaware.

Recording secretary—Mrs. S. S. Hesselgrade, St. Paul, Minnesota.

Treasurer—Mrs. G. Henry Mundt, Chicago, Illinois.

* * *

Councilors-at-Large and District Councilors of Woman's Auxiliary.—The following are the councilors-at-large and the district councilors of the Woman's Auxiliary elected at the annual session:

Councilors-at-large—Mrs. F. E. Clough, 3252 Rita Avenue, San Bernardino; Mrs. Henry S. Rogers, 930 I Street, Petaluma; Mrs. A. M. Henderson, 1600 M Street, Sacramento; and Mrs. Philip S. Doane, 855 Oak Knoll Circle, Pasadena.

District councilors—First District: Mrs. Lyell C. Kinney, Box 202, La Mesa. Second District: Mrs. John V. Barrow, 142 South Windsor Street, Los Angeles. Third District: Mrs. C. P. Proudfoot, Box 817, San Luis Obispo. Seventh District: Mrs. Louis H. Dyke, 6808 Ross Avenue, Oakland. Eighth District: Mrs. F. Scatena, 1400 Forty-first Street, Sacramento. Ninth District: Mrs. W. L. Blodgett, 221 Lincoln Avenue, Calistoga.

* * *

Panoramic View of the Woman's Auxiliary to the American Medical Association Regarding Work in California.—California has been concerned, aside from organization, with establishing itself upon a permanent foundation through a proper Constitution and has been able to do this with the full support of the California Medical Association, who are printing these Constitutions as a gift to the state auxiliaries.

At the recent state meeting, held in San Francisco April 27-30, 165 women registered, with 55 delegates

* As county auxiliaries to the Woman's Auxiliary of the California Medical Association are formed, the names of their officers should be forwarded to the state recording secretary, Mrs. Maynard Harding, 4529 Rhode Island Street, San Diego. Brief reports of county auxiliary meetings will be welcomed by Mrs. Harding and must be sent to her before publication takes place in this column. For lists of state and county officers see advertising page 6.

and 115 women seated at the annual luncheon. The auxiliary now feels safely launched and on an even keel.

The keynote of each county report was education, but the social side, welfare work, Red Cross, changing the position of a state senator, creating sentiment for a tuberculosis sanatorium, local philanthropies—all had their places with the scientific programs. A chart, "The Technique of Following a Bill Through the Legislature," provided a most unique, striking and valuable object lesson of information as to what we are all up against in our legislatures and their procedure. This subject is highly recommended to all organizations.

A resolution was introduced and adopted and directed to the National Committee on the "High Cost of Medical Care," asking for a change in the name under which the committee functions to one more in accord with the facts they are studying, namely, "The High Cost of Illness or Sickness." The original name implies some fault of the medical profession: while the proposed name is inclusive of all the various factors involved in the problem. A copy has been sent to the national auxiliary asking their indorsement of said resolution at the Philadelphia convention. The California Medical Association are presenting a similar resolution to the House of Delegates of the American Medical Association, whose membership now closely approaches nine hundred.

The interest shown and the friendliness in the social life at this convention demonstrated a new order which we hope has come to stay.

MRS. JAMES F. PERCY.

* * *

Los Angeles County

Preceding the regular meeting of the Woman's Auxiliary to the Los Angeles County Medical Association on June 18 the board of directors of the auxiliary entertained at luncheon in honor of Mrs. Frank E. Coulter of Santa Ana, state president-elect. The guests included the following state officers: Mrs. W. H. Sargent, president, Oakland; Mrs. Frank E. Coulter, president-elect, Santa Ana; Mrs. Maynard Harding, recording secretary, San Diego; Mrs. Chester J. Teass, treasurer, San Luis Obispo; Mrs. F. E. Clough of San Bernardino, Mrs. Philip Schuyler Doane of Pasadena, Mrs. A. M. Henderson of Sacramento, councilors-at-large; Mrs. Lyell C. Kinney of San Diego, Mrs. John V. Barrow of Los Angeles, Mrs. C. P. Proudfoot of San Luis Obispo, district councilors; and Mrs. Frederick Scatena, Sacramento.

Mrs. Philip Schuyler Doane introduced Mrs. Coulter with the gracious request that she give her impressions of the Los Angeles County Auxiliary. "Do we fulfill your mental picture?" Mrs. Doane inquired. And Mrs. Coulter gave full assurance that the picture was amply filled.

Mrs. Doane made the gratifying announcement that our own Mrs. James F. Percy, first president of the Los Angeles County Auxiliary, state president for the past year, had been elected second vice-president of the national auxiliary at the meeting at Philadelphia this month.

The visiting state officers were introduced; also Mrs. Irma Wann Buwalda, who was the speaker of the afternoon.

Mrs. Doane opened the meeting and gave a keen, practical talk about our work. She read the list of the new Nominating Committee: Mrs. John V. Barrow, chairman, Los Angeles; Mrs. O. E. Grist, Glendale; Mrs. Scott B. Gleeton, Monrovia; Mrs. Hiram B. Tebbetts, Los Angeles; Mrs. Clifford A. Wright, Los Angeles.

State President Mrs. W. H. Sargent and President-elect Mrs. F. E. Coulter were presented and following their pleasant responses Mrs. Doane introduced the speaker, Irma Wann Buwalda. Mrs. Buwalda is a graduate of the Law School of the University of California, a noted lecturer in the University Extension Course, an authority on prison reform, and one of the five directors in this country of the International Association of Policewomen.

This country has a crime complex, she said. Any kind of crime is public ammunition for press, pulpit, platform, and populace. Our prisons today are finishing schools for criminals—postgraduate courses where tyros are made masters in crime. The criminal today is no longer a moron—an educated business man, indeed, thanks to our legal shortcomings.

She extolled the new prison plan for women which will be developed not far from Tehachapi in the near future, and expressed the hope that no paroles would be granted without the opinion of a medical expert.

Mrs. Doane then rose to close the meeting, saying: "There are indeed two classes of criminals—the caught and the uncaught." She announced that the auxiliary would take a recess until the autumn. "I bid you good-bye until October."

But before leaving, the members and guests gathered about the beautiful tea tables for an hour of happy camaraderie.

CORA YOUNG WILLIAMS,
Publicity Chairman.

* * *

Orange County

The Woman's Auxiliary to the Orange County Medical Association held its May meeting at the home of Mrs. Herbert Johnston in Anaheim. We were fortunate in having Mrs. Dexter R. Ball, retiring state secretary-treasurer, present to give an account of the meetings of the state convention. She and Mrs. James Percy, who was also present, gave an interesting and charming description of the convention. The auxiliary was very enthusiastic over the election of Mrs. F. E. Coulter, our president, to the position of state president-elect.

That evening the auxiliary was the guest of the Orange County Medical Association at a dinner in McFarland's Cafe in Fullerton. The auxiliary contributed part of the program, while the doctors had several speakers from Los Angeles, who gave the report of the delegates to the convention. The entire evening was a great success and decidedly interesting

NEVADA STATE MEDICAL ASSOCIATION

W. A. SHAW.....President
R. P. ROANTREE, Elko.....President-Elect
H. W. SAWYER, Fallon.....First Vice-President
E. E. HAMER, Carson City.....Second Vice-President
HORACE J. BROWN.....Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER, S. K. MORRISON.....Trustees

COMPONENT COUNTY SOCIETIES

WASHOE COUNTY

Washoe County Medical Society held its last semi-annual meeting on the night of June 9 at the Nevada State Building.

Dr. Earle Creveling, president, occupied the chair. The president called upon Dr. John E. Wright, graduate of Guy's Hospital Medical College, London, England, and lately from the Holberton Hospital, Antigua, British West Indies, who read a paper on "Tetanus," based upon a personal experience of forty cases in five years' service at the Holberton Hospital.

Doctor Wright's paper was very appropriate, now that the toy pistol and firecracker season incident to July Fourth is on with the American boy. (Editor's Note: Secretary Bath's report on Doctor Wright's address will be printed in the Clinical Notes department in a later issue of CALIFORNIA AND WESTERN MEDICINE.)

After the address by Doctor Wright, the society adjourned until September 8, 1931.

THOMAS W. BATH, *Secretary.*

UTAH STATE MEDICAL ASSOCIATION

WILLIAM L. RICH, Salt Lake City.....President
R. A. PEARCE, Brigham City.....President-Elect
M. M. CRITCHLOW, Salt Lake City.....Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake City.....Associate Editor for Utah

OFFICIAL NOTICE

Doctors Critchlow, Pearsall, and Lindem of the Program Committee announce the following list of speakers for the coming state meeting:

Harlow Brooks, M. D., New York.
Glen E. Cheley, M. D., Denver, Colorado.
B. E. Bonar, M. D., Salt Lake.
Howard Morrow, M. D., San Francisco.
W. E. Stallings, M. D., Boise, Idaho.
A. J. Carlson, M. D., University of Chicago.
Chauncey D. Leake, M. D., University of California.
A. L. Smith, M. D., Ogden.
Ed Le Compte, M. D., Salt Lake City.
Mr. O. F. McShane, State Industrial Commission, Salt Lake City.
Belle Gemmill, M. D., San Diego, California.
Lenord E. Wolters, M. D., Los Angeles, California.
William C. McCarty, M. D., Rochester, Minnesota.
A. Steindler, M. D., Iowa City, Iowa.

Postgraduate courses will be given in the afternoon periods of September 9, 10, and 11, with a public meeting the evening of the 9th. Postgraduate work will be in the hands of Doctors Brooks, Steindler, McCarty, Stallings, Wolter, and Morrow.

BOX ELDER COUNTY

A meeting of the Box Elder County Medical Society was held in Brigham City May 14, with the following members present:

Doctors A. D. Cooley, Odeen Luke, R. A. Pearse, E. A. Weymuller, T. E. Betensen, and E. H. White.

Dr. Reese Merrell was admitted into the society by his card from the Carbon County society.

Attorney Lewis Jones was the speaker of the evening. He discussed the legal phases of abortion. He said that in the past few years the courts had taken a more liberal interpretation of the law on this subject. He also stated that there was no law in the State of Utah against the doctors giving contraceptive advice.

It was voted to make this the last meeting for the summer, until after the state meeting in September.

R. A. PEARSE, *Secretary.*

SALT LAKE COUNTY

The regular meeting of the Salt Lake County Medical Society was held Monday evening, May 25, at the Holy Cross Hospital.

The meeting was called to order by President F. M. McHugh. Thirty-seven members and six visitors were present.

The clinical program was as follows: "Malignant Hypertension," by R. M. Tandowski; "Carrel-Dakin Treatment of Wounds," by J. A. Phipps; "Avulsion of the Tibial Tubercle," by J. J. Galligan; "Multiple Abscesses of the Kidney with Septicemia," by W. G. Schulte, and F. A. Goeltz; "Pathologic Specimens," by T. A. Flood.

Motion by Dr. O. J. LaBarge that the society send a letter of condolence to the family of Doctor Worthin was seconded and carried.

J. P. Tuttle moved that a letter of condolence be sent to the family of Doctor Prentiss. This motion was seconded and carried.

* * *

The regular semiannual business meeting of the Salt Lake County Medical Society was held Monday evening, June 8, at the Newhouse Hotel.

The meeting was called to order by President F. M. McHugh at 8:05 oclock. Forty-seven members were present.

The reports of the committees on Public Health and Legislation, Necrology, Library, Boy Scouts, and Telephone were accepted and filed.

The Medical Economics Committee, Dr. E. M. Neher, chairman, reported that it was still investigating the organization of various credit bureaus. This report was discussed by Dr. Fred Stauffer.

The report of the fee schedule committee was read by Dr. M. M. Critchlow in the absence of Dr. J. P. Kerby. Dr. F. H. Raley moved that the report be accepted and the recommendations outlined be adopted. This motion was discussed by Doctors A. C. Callister, V. P. White, L. E. Viko, and R. W. Owens. Dr. Fred Stauffer amended the motion to read that that portion of the report be adopted referring to the instruction of the delegates to the Utah State Medical Association and that the rest be referred back to the committee for further investigation. Amendment seconded and carried and motion carried.

The reports of the Law Enforcement Committee and Program Committee were accepted and filed.

Dr. L. E. Viko discussed at length the charity work performed by physicians, mentioning the fact that usually such work was accredited to various charity agencies and that the public frequently were led to believe that the physicians were paid by the agencies for this medical care. He mentioned the necessity during such an economic depression as is being experienced at the present time of informing the people how to reduce their dietary expenses without endangering their health. He suggested that a committee was needed to investigate the facts in regard to the necessity for increased charity medical services during the depression and to specifically recommend measures to provide for adequate care for indigents which will give to the physicians the credit due them. Dr. L. E. Viko moved that such a committee be appointed. This motion was discussed by Dr. A. C. Callister. Dr. F. A. Goeltz amended the motion to read that the chairman of this committee be made the representative of the Salt Lake County Medical Society on the Community Chest Board and that the Community Chest Board be requested to admit this member to the board. The amendment was seconded and carried and motion carried.

The society then proceeded to the election of delegates to the state convention.

Dr. J. Z. Brown moved that the thirteen receiving the highest number of votes be elected delegates and the next three be elected alternates. Motion seconded and carried.

The following delegates were elected: From the L. D. S. Hospital—Doctors L. E. Viko, E. L. Skidmore, A. C. Callister, Wilkie H. Blood, L. A. Stevenson, J. R. Lewellyn, Fred Stauffer, O. J. LaBarge, Roy Groesbeck, and S. C. Baldwin. From the Saint Marks Hospital—F. J. Curtis, F. A. Goeltz, H. P. Kirtley. The following alternates were elected: Doctors J. P. Kerby, F. R. Slopanskey, and E. R. LeCompte.

Following the election, refreshments were served and the meeting adjourned at 10 o'clock.

BARNET E. BONAR, *Secretary.*

WEBER COUNTY

The Weber County Medical Society was honored by having Dr. Robert C. Coffey as its guest on the night of May 21. Invitations had been sent to the members of other county societies to be present and quite a number of visiting members attended the banquet and meeting held in the Bigelow Hotel.

After the dinner Doctor Coffey addressed the visitors and members on the subject of "The Field of Usefulness of Gauze Drainage and the Quarantine Pack in Connection with Abdominal and Pelvic Surgery." This was a most excellent and instructive paper and was greatly enjoyed. The unusually large attendance of members present was another factor which rendered the meeting a success.

CONRAD H. JENSEN, *Secretary.*

MISCELLANY

Items for the News column must be furnished by the twentieth of the preceding month. Under this department are grouped: News; Medical Economics; Correspondence; Department of Public Health; California Board of Medical Examiners; and Twenty-five Years Ago. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

The American College of Physicians in San Francisco in 1932.—The American College of Physicians will hold its sixteenth annual clinical session at San Francisco, with headquarters at the Palace Hotel, April 4 to 8, 1932. Following the clinical session, a large percentage of the attendants will proceed to Los Angeles, where a program, principally of entertainment, will be furnished April 9, 10, and 11.

Announcement of the dates is made particularly with a view not only of apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1932 meetings.

Dr. S. Marx White of Minneapolis is president of the American College of Physicians, and will arrange the program of general sessions. Dr. William J. Kerr, professor of medicine at the University of California Medical School, San Francisco, is general chairman of local arrangements, and will be in charge of the program of clinics. Dr. Francis M. Pottenger of Monrovia is president-elect of the college, and will be in charge of the arrangements at Los Angeles. Mr. E. R. Loveland, executive secretary, 133-135 South Thirty-sixth Street, Philadelphia, Pennsylvania, is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming session.

The Northern District Eye, Ear, Nose, and Throat Society was organized on April 14, 1931. Physicians practicing this specialty and resident in the territory which extends from Merced and Vallejo on the south, to Chico on the north, are eligible for membership.

At the first meeting on April 14 Dr. Charles McKee presented some interesting cases for discussion and Dr. William Ellery Briggs gave reminiscences on early ophthalmological work.

At the second meeting Dr. T. W. Kelsey discussed acute otitis media, from a classification viewpoint, and Dr. John W. Green reviewed acute mastoiditis.

The next regular meeting will be held at Hotel Clark, Stockton, on June 9. The following papers will be presented:

"Zinc Ionization Treatment of Chronic Suppurative Middle Ear," by Dr. C. A. Broaddus.

"Nonsurgical and Dry Treatment of Chronic Suppurative Middle Ear with Iodin Powder," by Dr. H. L. Gregory.

"Fractures of the Face Involving the Nasal Accessory Sinuses, with Case Reports," by Dr. Dewey R. Powell.

The following are officers of this northern district group: Dr. William Ellery Briggs, chairman; Dr. George Spencer; Dr. J. Roy Jones, secretary.

Clinical Tropical Medicine.—A special course in clinical tropical medicine will be held at the Hospital for Tropical Diseases, 25, Gordon Street, London, W. C. I., from October 5 to October 23, 1931.

On the mornings of Tuesday and Thursday of each week, from 10 to 12, students may occupy themselves with a study of the clinical cases in the Hospital for Tropical Diseases, and museum demonstrations will be given under the direction of the medical superintendent and the clinical assistant.

The following subjects will be studied: enteric fever, undulant fever, phlebotomus fever, dengue fever, yellow fever, beriberi, pellagra, amebic abscess, heatstroke, yaws, ulcerating granuloma, climatic bubo, filariasis, with differential diagnosis of the fevers.

The fee for the course is about $41. Those who wish to enroll for the course should address the Secretary of the Fellowship of Medicine at No. 1, Wimpole Street, London, W. 1.

University of California Medical School, San Francisco.—Changes in faculty, effective July 1, 1931:

CHANGE IN TITLE

W. S. Franklin, from clinical professor of ophthalmology to emeritus clinical professor of ophthalmology.

PROMOTIONS

E. H. Falconer, from associate clinical professor of medicine to clinical professor of medicine.

E. S. Kilgore, from associate clinical professor of medicine to clinical professor of medicine.

H. Lisser, from associate clinical professor of medicine to clinical professor of medicine.

E. W. Twitchell, from associate clinical professor of neurology to clinical professor of neuropsychiatry.

J. L. McCool, from associate clinical professor of ophthalmology to clinical professor of ophthalmology.

Mary E. Botsford, from associate clinical professor of anesthesia to clinical professor of anesthesia.

Miriam E. Simpson, from assistant professor of anatomy to associate professor of anatomy.

S. F. Cook, from assistant professor of physiology to associate professor of physiology.

D. M. Greenberg, from assistant professor of biochemistry to associate professor of biochemistry.

Rachel L. Ash, from assistant clinical professor of medicine and pediatrics to associate clinical professor of medicine and pediatrics.

H. Harris, from lecturer in medicine to associate clinical professor of medicine.

Eva C. Reid, from assistant clinical professor of psychiatry to associate clinical professor of psychiatry.

F. C. Cordes, from assistant clinical professor of ophthalmology to associate clinical professor of ophthalmology.

E. Ogden, from instructor in physiology to assistant professor of physiology.

I. L. Chaikoff, from instructor in physiology to assistant professor of physiology.

D. W. Bennett, from instructor in medicine to assistant professor of medicine.

O. W. Jones, from instructor in surgery to assistant professor of surgery.

Jessie L. Delprat, from instructor in medicine to assistant clinical professor of medicine.

M. H. Hirschfeld, from instructor in neuropsychiatry to assistant clinical professor of neuropsychiatry.

W. D. Horner, from instructor in ophthalmology to assistant clinical professor of ophthalmology.

T. J. Lennon, from assistant in medicine to instructor in medicine.

E. J. Munter, from assistant in medicine to instructor in medicine.

H. M. F. Behneman, from assistant in medicine to instructor in medicine.

A. G. Bartlett, from assistant in medicine to instructor in medicine.

A. E. Gauthier, from assistant in medicine to instructor in medicine.

Hilda M. Davis, from assistant in medicine and pediatrics to instructor in medicine and pediatrics.

H. G. Marquez, from assistant in tropical medicine to instructor in tropical medicine.

A. B. Chinn, from assistant in medicine to instructor in medicine.

F. H. Cunha, from voluntary assistant in medicine to instructor in medicine.

F. C. Nass, from assistant in neuropsychiatry to instructor in neuropsychiatry.

A. M. Vollmer, from assistant in obstetrics and gynecology to instructor in obstetrics and gynecology.

Kathleen J. Atkinson, from assistant in medicine to instructor in medicine.

NEW APPOINTMENTS

J. F. Rinehart, assistant professor of pathology.

M. L. Montgomery, assistant professor of surgery.

N. Van Patten, lecturer in medical bibliography.

A. H. Rowe, lecturer in medicine.

A. E. Larsen, instructor in medicine.

F. C. Bost, instructor in orthopedic surgery.

LEAVES OF ABSENCE

R. L. Richards, lecturer in psychiatry, for the year 1931-32.

J. M. D. Olmsted, professor of physiology, from July 1, 1931 to December 31, 1931.

Esther Rosencrantz, associate professor of medicine, from July 1, 1931 to December 31, 1931.

Margaret Schulze, assistant professor of obstetrics and gynecology and pathology, from July 1, 1931 to December 31, 1931.

Annual Meeting of Pacific Association of Railway Surgeons.—The twenty-ninth annual meeting will be held in the Yosemite Valley, August 28-29. Headquarters, Hotel Ahwahnee. Ample accommodations will be afforded also at Camp Curry. A scientific and social program of particular attractiveness has been planned. Four or five chief surgeons of eastern railroads will be in attendance. The largest meeting in the history of the association is anticipated.

The Committee on Scientific Program consists of: Doctors Wallace I. Terry (Chairman), San Francisco; F. O. Butler, Eldridge; E. E. Hamer, Carson City; D. H. Moulton, Chico; and Philip Stephens, Los Angeles.

The Committee on Arrangements: Doctors A. M. Moody (chairman), San Francisco; R. L. Dresel, San Francisco; H. O. Hund, San Rafael; I. S. Ingber, San Francisco; Luther Michael, San Leandro; J. N. Osburn, Los Angeles; and L. E. Phillips, Palo Alto.

For further information, write to the association secretary, Dr. W. T. Cummins, Southern Pacific Hospital, San Francisco.

MEDICAL ECONOMICS

An Announcement to Members and to County Society Committees on Medical Economics

The Committee on Medical Economics of the California Medical Association was created for the purpose of investigating methods by which medical service, including hospitalization, is now being rendered to the people of California.

It was understood that the character of the service and the cost to those furnishing it and to those receiving it, where possible, be ascertained. The reasonable ability of the people to pay for medical service, naturally, is an important feature of the investigation.

There has been much written and many statements made on this subject that are without any factual foundation. There has been many interesting and sometimes fantastic systems proposed as a solution of all the difficulties in rendering adequate medical service to all people.

This committee gives sympathetic consideration to every suggestion made, but insists that assertions be backed by truth-proving facts. Of one thing the committee is firmly convinced and that is, that the problem of furnishing adequate medical care at a cost that people of moderate means can easily afford varies greatly in different communities within the borders of our own state. This being true the committee urges every county medical society to appoint a local committee to coöperate with the state committee and its subcommittees.

These local committees should investigate and report conditions in their own counties, send reports to the state committee and, above all things, they should refrain from approval of suggested plans until they have been subjected to analytical study and approval by the state society.

This column will be devoted to contributions on the subject, and while the state committee will carefully study every communication, the fact that it is printed here does not mean that the committee either approves or is responsible for it.

JOHN H. GRAVES, M. D.,
Chairman, California Medical Association Committee on Medical Economics.

Los Angeles County Medical Association Contracts With the Metropolitan Water District

In the editorial column of this issue of CALIFORNIA AND WESTERN MEDICINE, as one of the items under "Comment on This and That" are some remarks on a proposed contract or arrangement entered into between the Los Angeles County Medical Association and the Metropolitan Water District of Southern California for the medical and surgical care of the employees of the latter organization. (See page 52.)

This venture is so unusual that it seems desirable that the account of the proposed plan, as given in the *Bulletin* of the Los Angeles County Medical Association, should be here reprinted. It is as follows:

"The Metropolitan Water District of Southern California, organized under the Metropolitan Water District Act for the purpose of building an aqueduct to bring water from the Colorado River to the coastal plains, includes eleven cities.

"Last February a representative of the district approached us with the request that the Los Angeles County Medical Association supply them with a minimum fee schedule on the basis of which our members would render service to their employees. They planned to collect from every employee a stated sum per month, to be expended for medical and hospital care for sickness and accidents not covered by the industrial compensation act, and decided to give each employee the privilege of selecting his own doctor from the members of the Los Angeles County Medical Association rather than making a contract with any one doctor or group. They stated that many of their employees would be people without means, who under ordinary circumstances would have to be taken care of by the municipal or county organizations or treated by the physician without remuneration. The average rate of pay for all employees of the district is estimated at $150 per month.

"The Committee on Medical Economics recommended the proposition to the favorable consideration of the Council, which endorsed it in principle, and instructed the Fee Schedule Committee to prepare a schedule to meet the circumstances. After much discussion by the Council and the committees involved, a special committee was appointed to work out the final arrangements. The fee schedule for this work is as follows:

Office visit	$ 3.00
Residence call	5.00
Mileage beyond two and one-half miles from the physician's office or home (one way)	1.25
Local hospital call	5.00
Telephone advice	1.50
History and physical examination	25.00
Written opinion	10.00 up
Consultation	25.00 up

Consultation with Metropolitan Water District representative: According to time consumed.	
Emergencies — intoxication, poisoning, asphyxiation, etc.	10.00 up
Night work (when called between 8 p. m. and 7 a. m.): Twice ordinary schedule.	
Minor operations	5.00 up
Major operations (subject to special conditions)	150.00

"In view of the fact that the bills will be paid by the Water District, and that losses through uncollectible accounts will be eliminated, there will be a courtesy discount of 33⅓ per cent from this minimum fee schedule.

"The schedule for laboratory and x-ray fees was published in the *Bulletin* of May 19. It is also subject to the 33⅓ per cent discount.

"Bills should be rendered to the Water District for the full amount and they will deduct the discount.

* * *

"The following regulations have been given to the employees of the Metropolitan Water District:

"***Regulations.***— Employees desiring medical attention will procure from the Water District a form similar to that shown below, two copies of which will be handed to the attending physician, who will mail one to the Metropolitan Water District on the completion of the case, or at the end of the month if the patient is still under treatment, and retain the other for his records.

"If in order to establish the diagnosis it becomes necessary to do more extensive history and examination work than is required at an ordinary office visit, or if special consultation or major operation is required, separate order forms must be furnished the doctor. In case of major operations, which would not ordinarily come within the minimum shown, the physician should take the matter up with the person signing the original order to have an understanding as to just what the charge will be. Reasonable latitude will be allowed the doctor in cases of emergency where delay might jeopardize the patient's life.

"In case the doctor decides that hospital attention is necessary, order will be issued by the Water District on the particular hospital requested by the employee, in accordance with the following schedule:

"'Bed in ward, $4.50 per day.

"'In case doctor states it is necessary to have private room, maximum of $6 per day.

"'Where necessary, cost of operating room will be allowed, as well as expenditures in connection with medical supplies and other expenses outside of the regular room and board.

"'Private nurses will be furnished in such cases as are deemed absolutely essential by the physician.'

"In case an employee desires accommodations in excess of this, the difference must be borne by the employee. In case of severe illness, in which hospital accommodations are not convenient, and if the employee's home is in the vicinity of his work, a nurse may be sent to his home, the expense being borne by the district; such expense, however, to be no greater than if he were sent to a hospital.

"Provisions will be made for artificial limbs and eyes under certain circumstances.

"'***Prolonged Sickness or Injury.***—In case of prolonged sickness or injury, medical, surgical, and hospital services under this coöperative arrangement shall not be furnished in excess of one year.

"'***Employee Must Remain Under Observation.***—When a sick or injured employee has left the service or the vicinity so that he can be no longer under observation by the officials of the district, any benefits to which he may otherwise be entitled under these regulations shall cease, but so long as he remains under supervision of the local physician employed by the district, within the limit of one year after the accident or the commencement of his illness, such medical, surgical, and hospital services as he may be entitled to under these regulations and not covered by the Workmen's Compensation, Insurance and Safety Act of 1917, as amended, may be furnished and paid for from the medical fund.

"'***Obedience to Physician's Orders.***—Employees should obey the orders of the physician regarding treatment, and if disobedience of such orders results in an increased cost of treatment, the excess cost will not be paid by the district.'

* * *

"The following is quoted from the letter which the committee addressed to the Metropolitan Water District:

"'This schedule is submitted to your organization as the result of careful consideration by a special committee with the understanding that it is an attempt to arrive at a satisfactory basis for rendering proper medical care, together with fair compensation for the same.

Principle of Operation

"'It is understood that the practice of medicine and surgery by each member of the Los Angeles County Medical Association is an individual matter, and this schedule is in the form of a recommendation only to our members.

"'It is also understood that the fees as submitted are distinctly below the average of the approved fee schedule for private practice, and our purpose in this instance is motivated entirely by an effort to do our part in properly caring for the health of that portion of our population whose earning capacity and inadequate budgeting of their earnings might otherwise deprive them of proper care, or cause them to become indigent and thus be thrown upon the county taxpayer for such care as required.

"'These fees are for the care of ordinary, or what might be termed "typical" illness, by the general practitioner. Special circumstances will call for special arrangements regarding remuneration. Specialists' fees are not included in this schedule. Consideration is also to be given to cases in which unusual time is consumed in visits, whether in the office or elsewhere.'

"It is also the understanding that if the physician whom the employee desires to treat him does not care to render services in accordance with this schedule, he may submit bills to the Water District in accordance with the schedule and arrange with the patient to pay any excess.

Instructions

"'Each employee paying a hospital fee and desiring medical, surgical, or hospital attention should be furnished with forms, to be presented to the physician before treatment begins.

"'If in order to establish the diagnosis it becomes necessary to do more extensive history and examination work than is required at an ordinary office visit, or if special consultation or major operation is required, separate order forms must be furnished to the doctor.

"'The Metropolitan Water District of Southern California will not pay the cost of treatment of chronic or venereal diseases, nor of injuries received which are the result of alcoholism or misconduct, nor for dental work, nor for the examination for or the fitting of glasses or the furnishing of glasses, except in case of accidents not covered by the Workmen's Compensation, Insurance and Safety Act of 1917, as amended.

"'No encouragement should be given to employees to call a physician to treat trivial ailments simply because they have paid a hospital fee.

"'Physicians are requested and expected to coöperate with the district in limiting treatment to those who are legitimately entitled to it.'"

CALIFORNIA STATE MEDICAL LIBRARY ACT—ITS TEXT *

ASSEMBLY BILL NO. 477

Introduced in the Assembly of the forty-ninth California Legislature on January 20, 1931, by Assemblyman Roy Nielsen. Passed the Assembly May 5, 1931. Passed the Senate May 14, 1931. Approved by Governor James J. Rolph, Jr., on June 9, 1931.

CHAPTER 699

An act to create a state medical library under the direction of the regents of the University of California, providing for the establishment of branches of said library and for the administration, maintenance, and support of the same, and making an appropriation therefor.

The people of the State of California do enact as follows:

Section 1. A state medical library is hereby created in and as a part of the library of the University of California and shall be known as the state medical library, said state medical library shall have its administrative headquarters in such place as the regents of the University of California may select, and shall have two branches, one in the city and county of San Francisco and one in the city of Los Angeles. Said state medical library shall be under the supervision and control of the regents of the University of California and shall be administered and conducted by the said regents of the University of California in conjunction with the medical school of said University of California.

Sec. 2. The regents of the University of California are authorized to provide suitable and necessary facilities for the storage and care of books, journals, manuscripts and exhibits, and to prepare, print and distribute suitable catalogues and other printed information of said state medical library and to appoint one or more assistant librarians to have direct supervision and control over the state medical library and its branches, and to fix the compensation of such assistant librarians. Said state medical library and its branches shall be available for the use of all legally registered physicians and surgeons resident in the State of California. The regents of the University of California are further empowered to establish and conduct, subject to such rules or regulations as the said regents may fix and adopt, a book package service in connection with said state medical library, by means of which, on request, any legally registered physician or surgeon resident in the State of California, or the librarian of any medical college approved by the state board of medical examiners, may borrow for temporary use books or periodicals in said library.

Sec. 3. The regents of the University of California are authorized to purchase scientific medical books and other publications, manuscripts and exhibits, to comprise the state medical library, with the advice of the state medical advisory board, which is hereby created.

The state medical library advisory board shall consist of the president of the University of California, the president of the state board of health, the president of the state board of medical examiners, the dean of the medical school of the University of California at San Francisco and the dean of the Los Angeles medical department of the University of California at Los Angeles, all acting ex-officio. The board shall select its own chairman, vice-chairman, and secretary. The state medical library advisory board shall have authority to propose rules and regulations for the management and operation of the state medical library, but the same shall become effective only upon the approval of the regents of the University of California. The members of such board shall receive no compensation, but shall receive their actual and necessary expenses incurred in performance of their duties.

Sec. 4. The branch libraries to be established in the city and county of San Francisco and in the city of Los Angeles shall be established at the medical school of the University of California, in San Francisco, and at the Los Angeles medical department of the University of California. In expending funds received for the support of the state medical library the regents of the University of California shall expend an equal amount for the support of each of said two branches. The regents of the University of California shall not be obliged to provide for the support of said state medical library or expend moneys therefor except to the extent of such appropriations as may be directly provided therefor by this act or from time to time by action of the Legislature of the State of California, and to the extent that there are available other funds constituting or arising from gifts made in support and aid of said state medical library and accepted by the said regents.

Sec. 5. There is hereby appropriated and at the time this act takes effect and on the thirty-first day of July of each year thereafter, the state controller shall transfer from the board of medical examiners' contingent fund to the regents of the University of California for the support and maintenance of said state medical library, all unencumbered moneys in the board of medical examiners' contingent fund in excess of one hundred thirty thousand dollars. The moneys hereby appropriated shall be expended by the regents of the University of California with the advice of the state medical library advisory board for the purchase of books and other publications, exhibits, and supplies for the state medical library and for the payment of expenses of the members of the state medical library advisory board, the salaries of assistant librarians, and operating expenses. Nothing in this act contained shall be deemed to prevent the regents of the University of California from charging to persons who may draw books from said state medical library through its package service the actual costs of shipment, including costs of transportation.

* For other information concerning this bill, see last month's (June) number of California and Western Medicine, page 417. Also editorial comment in this issue of California and Western Medicine.

CORRESPONDENCE

Subject of This Letter: A Further Report on Obstetrical Analgesia

To the Editor: In the May 1930 issue of CALIFORNIA AND WESTERN MEDICINE (page 331) was printed an outline of the author's method of obstetrical analgesia, which had then been in use for about four and one-half years. A short time ago, because of the good results reported by Dr. John S. Lundy of the Mayo Clinic with pentobarbital sodium (nembutal) as a preoperative sedative, this drug has been added to the technique, which is now as follows: When the patient is definitely in labor, with good pains, she is given pentobarbital sodium, grains 1½, by mouth. About twenty minutes later she is given scopolamin (Roche), grain 1/100, and magnesium sulphate 50 per cent, 2 cubic centimeters, intramuscularly. Thirty minutes later, magnesium sulphate 50 per cent, 2 cubic centimeters intramuscularly. Thirty minutes after this, scopolamin (Roche) 1/200 and magnesium sulphate 50 per cent, 2 cubic centimeters. Thus, every hour

the patient receives scopolamin, grain 1/200 (except for the first dose of grain 1/100), combined with magnesium sulphate 50 per cent, 2 cubic centimeters. At the half-hour intervals between the above, she is given magnesium sulphate 50 per cent, 2 cubic centimeters. As a rule no more than three doses of scopolamin are needed.

The result is a quiet, coöperative patient, in comparative comfort, who can be anesthetized with a minimum of the inhaled drug. A small number of patients at the Los Angeles General Hospital and in private practice, under this method have shown very satisfactory analgesia.

Very truly,

HARRY S. FIST.

1930 Wilshire Boulevard.

Subject of Following Letter: The Los Angeles Rabies Situation

(A letter from the director of the Hooper Foundation of Medical Research, University of California.)

To the Editor: In response to a letter which, at your suggestion, I received from Mr. Thomas F. Cooke, councilman of the second district, city of Los Angeles, I have prepared a statement, copy of which I herewith enclose, and which I have also sent to him. If there is any additional information you desire, I will be very glad to prepare it.

You will note from the last paragraph that in the handling of a rabies situation I recommend a series of steps to be taken before the city contemplates passing a muzzling and leashing ordinance. Without the whole-hearted, sympathetic support of the people and the humane societies, I am sure that any program, well as it may be planned, will be another failure. Then again, in order to administer the ordinance in a humane manner, it is imperative that the police force, which probably will act as the executive branch of the control measures, should be thoroughly instructed.

My position concerning preinfectional vaccination is also stated. I have tried to analyze the available data, but have found that such evidence is exceedingly contradictory. As it is definitely proven that vaccination alone will not be successful, it is just as well that the city decide to attack the problem of the stray dog and consider the vaccination a voluntary procedure to be used by the owners who believe in it. If you desire further information, please do not hesitate to call on me.

With kindest regards, I am,

Sincerely yours,

K. F. MEYER.

Subject of Following Letter: Some Rabies Statistics From the Health Districts of the Los Angeles County Health Department

To the Editor: I am forwarding statistics on rabies as requested by you. However, I regret that our figures for the first six months of 1931 will not be ready for some time to come.

Very truly yours,

J. L. POMEROY, M. D.,
County Health Officer.
By N. P. Levin, M. D.

* * *

To the Editor: After telephone conversation with you I obtained figures on human rabies in Los Angeles County since 1925, which I am herewith enclosing for the reason that I feel that they may be of interest to you. The Epidemiology Division evidently overlooked including them in the figures which they supplied me yesterday, which were limited to dog rabies.

Very truly yours,

J. L. POMEROY, M. D.,
County Health Officer.
By N. P. Levin, M. D.

Human Rabies Since 1925—Los Angeles County

1926	
Alhambra District	1
Whittier District	1
Redondo District	1
Total	3
1927	0
1928	
Glendale District	1
1929	
Redondo District	1
1930	0
1931	1

Los Angeles City Rabies Statistics

On request by the editor, the following figures were sent him by the Health Department of the City of Los Angeles:

LOS ANGELES COUNTY HEALTH DEPARTMENT

Persons Bitten in the Year 1930 by Animals in Health District Subdivisions of the Los Angeles County Health Department

	Contacts	Persons Bitten	Given Emergency Treatments	Given Nitric Acid Treatments	Given Other Treatments	Given Pasteur Treatments	Furnished by Co. Health Dept.	Given by Co. Health Dept.	Given by Private Physicians
Alhambra District	41	293	271	208	63	59	26	26	32
Monrovia District	6	43	46	28	18	2	....	....	2
Pomona District	2	32	29	27	2	5	3	2	3
Whittier District	7	38	26	20	6	17	8	5	11
Huntington Park District	75	409	390	350	40	109	97	36	72
Compton District	35	151	143	125	18	49	36	14	33
Redondo Beach District	41	195	203	170	33	51	41	24	27
Santa Monica District	5	66	68	63	5	12	8	8	4
San Fernando District	4	27	28	26	2	5	4	1	3
Belvedere District	56	206	213	196	17	38	37	33	5
Glendale District	9	168	173	158	15	7	6	6	1
West Hollywood District	3	49	48	42	6	3	1	....	3
Outside territory	3	43	42	35	7	4	1	1	3
Total	287	1720	1680	1448	232	361	268	156	199

RABID ANIMALS

	1928	1929	1930
County Health Department area	216	175	295
Entire Los Angeles County	590	585	613

RABIES CONTROL DIVISION—CITY OF LOS ANGELES

Comparative Report of Dog Bites and Rabies for the years 1928, 1929, 1930, and January 1 to June 1, 1931

Calendar Year	Total No. Persons Bitten	Rabid Dogs	Persons Bitten by Rabid Dogs	Persons Bitten by Stray Dogs	Human Deaths from Rabies
1928	2321	327	144	300	0
1929	2563	327	174	363	1
1930	2919	239	149	341	0
1931 (January)	288	19	15	30	0
(February)	227	22	10	31	0
(March)	413	27	10	55	0
(April)	414	25	12	46	0
(May)	621	27	23	62	1

	Emergency Treatments Nitric Acid	Other Treat.	Pasteur Treatments by City Laboratory
1928	1985	220	100
1929	2191	244	129
1930	2493	289	114
1931 (Jan. 1 to June 1)	1679	187	49

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. IV, No. 7, July 1906

From some editorial notes:

County Societies.—Once more we desire to urge upon the attention of county societies, two things: First, the importance of developing the scientific side of their work along educational lines; and secondly, publicity. The County Medical Society should be the local postgraduate school. Its courses and its work should be so valuable that no member can afford to stay away, and no physician in the county can afford not to be a member. When this has been accomplished, then let the community know what you are doing. . . .

Scheme Beautiful.—One of the San Francisco papers recently published a scheme for the medical care of the unfortunate citizens who are still living in tent colonies in that city, which certainly must have come from the brain of a genius. Roughly, the plan beautiful was about this: Each camp was to have a general superintendent, at a salary of $250 a month, two stenographers at $60 a month, a few nurses at $75 a month, and an allowance of about $175 a month for postage, car fare, and sundries. The nurses, according to the philanthropic plan, should go about making investigations and inspections of certain specified areas, and when they found any sick or feeble persons, they should order the proper diet and secure the services of some nearby reputable physician, whose services would be *donated.* Lists of these "volunteer" physicians in each district would be made up so that the official nurses would have no difficulty in securing medical attendance promptly. Let everybody get some compensation—except the doctors! Of course! They do not need money; they do not need food; they are all rich; they are always giving their services anyhow, why not give some more? Probably no class of San Francisco citizens suffered as severely in the April catastrophe as did the professional class, and of these we may safely place physicians first, as over nine hundred of them lost either their houses or their offices or both. They worked night and day—for nothing and without thought of reward. For weeks and months they gave their time and their labor without money and without price. . . .

To County Secretaries.—The secretary of the State Society desires to extend to each and every county society secretary his thanks, in advance, for their united assistance in reassembling the records of the State Society. It will be a difficult task, and it will throw more work upon the shoulders of the county society secretaries—gentlemen whose earnest work for the medical profession is seldom recognized. . . .

From an article on "Medical Licensure" by S. D. Van Meter, M. D., Denver, Colorado.

The history of legislation relative to statutes regulating the practice of medicine is most interesting, and a paper on medical licensure is incomplete without at least a reference thereto. . . .

. . . The first and most natural question to arise in such an investigation is, *"What should be the basis of medical licensure?"* It should not be difficult to answer this question, as it cannot be anything other than *"proof of a standard of educational and moral qualification and that will insure the proper medical care of the sick or injured."* . . .

. . . In conclusion, permit me to urge the issue of medical licenses upon one basis, viz., that standard of educational and moral qualification which will insure the proper medical and surgical care of suffering humanity. Do not attempt to determine such qualification by any one method—use all rational means practicable; do justice to all; favor none; work hard for the appointment of good timber on examining boards; and keep all batteries in action against the quacks.

From medical society reports:

Shasta County Society.—Resolution of Dr. C. E. Reed, offered at our January meeting regarding letter of resignation of Dr. ——, viz.:

It was resolved that his resignation be not accepted on account of disrespectful language to our society, and that his name be dropped from the roll of membership of this society because of his continued violations of our laws in accepting contracts and performing contract work for lodges and organizations, the proof of which is contained in his letter of resignation. . . .

Los Angeles Medical Library.—Through the generosity of Dr. W. Jarvis Barlow of Los Angeles the medical profession of Southern California has recently become the recipient of a twenty-five thousand dollar library building, which is now in the course of erection in Los Angeles. . . .

* This column strives to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and new members.

DEPARTMENT OF PUBLIC HEALTH

By GILES S. PORTER, M. D., *Director*

The After-Care of Infantile Paralysis Cases.—The end results expressed in percentages of recovery of function following infantile paralysis depends chiefly upon two factors: First, the extent of damage to the nerve cells in the anterior horn of the cord at the time of the original infection; and second, the type of after-care to which these unfortunate individuals are subjected. The majority of these patients, fortunately, do not show a total destruction of these nerve centers, the nerve cells being only partially affected, in spite of the fact that the muscle group supplied from this center may show total inactivity in the initial stage. If this muscle group is immobilized and given complete, continuous and uninterrupted physiological rest in a neutral position over a sufficient length of time, then gradually reëducated, all of the possible recovery will take place and the maximum restoration of function occur. If, on the other hand, the case is denied the intelligent application of the above mentioned basic principles, it very often happens that a stretch paralysis is superimposed upon a neuromuscular paralysis and recovery is either retarded or permanently prevented. It is very common to see in the metropolitan centers cases in which neglect has resulted in the sacrifice of a large portion of possible repair, and cases in which either the original condition was entirely unrecognized or the importance of the general underlying fundamental principles of the after-treatment were likewise not understood. ***Most paralytic deformities are preventable.***

It has been the pleasure of the undersigned to see a complete foot drop, resulting from poliomyelitis and neglect of splinting and protection which added a stretch paralysis to a neuromuscular paralysis, recover approximately 100 per cent function after a few months of proper treatment, in spite of the fact that several years had elapsed between the onset of disease and beginning of treatment. It is a well known fact that probably the majority of cases of infantile paralysis are of the abortive variety, and next in frequency, those resulting in a comparatively small amount of paralysis. A very appreciable percentage of the scoliosis cases seen in the orthopedic clinics are unquestionably the result of unrecognized infantile paralysis.

It is very difficult for patients to appreciate the fact that if a muscle group is strong enough to accomplish a certain function, that there could be an element of abuse present in overtaxing its power by repeatedly going through this motion. Use of a partially paralyzed muscle group is only beneficial up to a point of physiological fatigue, at which point further and continued activity produces retrograde change. A partially paralyzed patient who can walk one block without overtaxing a limited musculature can unquestionably entirely neutralize the benefits of the exercise by walking a second block.

Probably the most valuable single method of reeducating partially paralyzed muscle groups is the underwater gymnasium. The rapidity with which improvement becomes evident in these patients fortunate enough to have the benefit of such a pool is sometimes amazing. The benefit, however, is again in direct proportion to the finesse with which the prescribed movements are selected and supervised. The general activity of a child, as in swimming, has no particular benefit because, left to their own resources, they will develop the remaining active groups, resulting in further disproportion with those affected in the paralysis. Partially paralyzed muscle groups operate absolutely under the law of supply and demand and will improve only when a proper conservation is adhered to.

From braces which have an important phase in the proper care of partially paralyzed muscles, come two great benefits: First, and perhaps the most important, is the maintenance of proper position by which a partially paralyzed group of muscles is not overbalanced by a comparatively stronger group which has been fortunate enough to escape the destructive influence of the causative agent of infection. Secondly, the mechanical help possible to obtain from the braces. In the early stages, the first is by far more important.

It is not uncommon to observe under proper treatment, functional improvement over a period of two, or even more, years following the inception of the disease, and the surgical reconstructive measures are seldom justifiable under eighteen months, or until sufficient time has elapsed under proper treatment, to allow an accurate estimation of the actual residual paralysis to be made.—Harold B. Barnard, M. D., Associate Chief of Staff of Orthopedic Hospital, Los Angeles.

Changed Hour for Heart Committee Broadcast.—The adoption of daylight saving time in eastern cities has necessitated a change in the hour of the radio broadcast sponsored by the Heart Committee of the San Francisco Tuberculosis Association. The new schedule is as follows:

KJBS—Tuesday, 11:15 to 11:30 a. m.

KFRC—Tuesday, 4 to 4:15 p. m.

Permanent Quarantine on Clams and Mussels.—The State Board of Public Health at its regular meeting held in San Francisco April 11, 1931, established a permanent quarantine upon clams and mussels during the months of June, July, August, and September of each year. This quarantine covers the entire California coast from Monterey County to the Klamath River in Del Norte County, with the exception of the bay of San Francisco.

Under the provisions of this quarantine order, the sale or offering for sale of clams and mussels gathered from the specified territory during the months of June, July, August, and September of each year is prohibited.

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By CHARLES B. PINKHAM, M. D.
Director of the Board

News Items, July 1931

Citations have been issued calling the following licentiates before the board at its regular meeting to be held at Native Sons Hall, San Francisco, legal hearings scheduled for 10 a. m., Tuesday, July 7, and continuing until the calendar has been completed:

David M. Angus, M. D., Seattle. Record of conviction: Alleged illegal operation.

Schuyler A. Barber, M. D., Porterville. Record of conviction: Narcotic violation.

Silas J. Brimhall, M. D., Elsinore. Alleged narcotic violation.

Silvius S. Craig, M. D., Wilmar. Record of Colorado: Revocation.

Fay E. Cramer, M. D., Hawthorne. Federal narcotic conviction.

Cecil R. Drader, M. D., Greenville. Narcotic conviction.

Philip Dyment, M. D., San Diego. Record of revocation of Georgia State certificate.

Suzuno Eda, Midwife, Fresno. Violation of Subdivision 16 of Section 14.

Edgar Ewing, M. D., Huntington Beach. Plea of guilty to alleged narcotic violation.

William C. Fiske, M. D., Hermosa Beach. Plea of guilty to manslaughter charge.

William B. Hamilton, M. D., Salt Lake City, Utah. Based on Utah charges.

Orient C. Higgins, M. D., Porterville. Narcotic conviction.

Christopher Howson, M. D., Oakland. Aiding and abetting an unlicensed practitioner.

Denwood N. L. Newbury, M. D., Spokane, Washington. Narcotics.

Ralph Newcomb, M. D., Lakeport. Violation of probation.

Asa Frye Speicher, M. D., Los Angeles. Alleged narcotic violation.

David A. Stevens, M. D., Los Angeles. Record of conviction: Moral charge.

Darrington Weaver, M. D., Los Angeles. Narcotic conviction.

On June 11, 1931, Governor Rolph signed Senate Bill 131, which will prove a valuable addition to the statutes designed to limit to bona fide institutions the granting of professional degrees. Under the existing laws any individuals can incorporate and obtain the right to grant professional degrees, without financial responsibility, physical equipment or educational qualifications. Senate Bill 131 requires every institution that grants a professional degree to file annually with the Superintendent of Public Instruction a report giving the names of the faculty, curriculum taught, names and addresses of the students, the degrees conferred, and the names of the individuals upon whom the degrees have been conferred.

An investigation report relates that Raymond H. Albers, licensed chiropractor, on May 20 pleaded guilty in Vallejo to a charge of violation of the Medical Practice Act in that he failed to use the suffix "D. C." or the word "Chiropractor" in conjunction with his use of the prefix "Dr.," and judgment was suspended on condition that he no longer violate the Medical Practice Act.

According to a Vancouver *Press* dispatch, printed in the San Francisco *Examiner* of May 26, 1931, Dr. Charles Bee Alexander is reported to have been sentenced to two years in the Washington State Penitentiary, asserted to have been based upon his alleged violation of the banking laws.

"The Tulare County Grand Jury today indicted Dr. S. A. Barber, sixty-one, Porterville physician, and Mrs. Jeannette Schwartz, a nurse, jointly, on two counts charging performance of two illegal operations on Miss Virginia Tarleton, nineteen, of Mendota, Fresno County. Doctor Barber is now serving an eight months' sentence in the Tulare County jail for the sale of narcotics to a Porterville woman. Suit was instituted today against Dr. Barber and Dr. O. C. Higgins, seventy-six, also of Porterville, by Dr. H. A. Todd, whose wife was sold narcotics, asking $250,000 from the two of them for the alleged loss of the society and companionship of his wife, due to the narcotics they supplied her . . . " (Fresno *Republican*, May 21, 1931). (Previous entry, June 1931.)

According to reports, "Dr." Arthur M. Benson, also known as M. V. Benson, who was formerly connected with the concern known as the Gilbert Thayer Foundation in Los Angeles, is now alleged to be an inmate of the Columbia Reformatory, Lorton, Virginia, under the name of Edward M. Dodge, following his asserted conviction of violation of the narcotic laws. (Previous entry, February 1928, and June, 1930.)

Investigation reports relate that Benjamin A. Burrill, Vallejo, licensed chiropractor, on May 20 pleaded guilty to a violation of the Medical Practice Act, in that he failed to use the suffix "D. C." or the word "Chiropractor" in connection with the use of the prefix "Dr." and judgment was suspended on condition that he no longer violate the Medical Practice Act.

On May 25 E. E. Cary is reported to have been found guilty in Los Angeles of violation of the Medical Practice Act and was later sentenced to pay a fine of $300 or serve fifty days in the city jail, sentence being suspended. He is reported as having left the state.

"W. J. Conway, Indian medicine man, was arrested this afternoon by J. W. Davidson, inspector for the State Board of Medical Examiners, on a warrant charging him with practicing medicine without a legal license. . . . The investigation came immediately following the death Tuesday of Mrs. Mary Marzola after she had taken medicine alleged to have been administered by Conway" (Previous entries, September 1929; January 1931.) Inspector Davidson closes his report with the following statement: "His records would lead us to believe that he does about $100 to $150 a day, and we can readily understand how he would be willing to pay a $100 fine."

"Dr. O. C. Higgins, seventy-six, Porterville physician, was admitted to probation this afternoon by Judge Frank Lambertson on a charge of selling narcotics. Terms of probation include a $750 fine, payable in three monthly instalments of $250 each, beginning June 15, and a one-year suspended jail sentence. Doctor Higgins was arrested the afternoon of January 15, a few minutes after he sold Mrs. H. A. Todd of this city some morphin. State narcotic agents had supplied the Visalia woman with marked money, which she gave to Doctor Higgins in exchange for the drug" (Visalia *Times-Delta*, May 18, 1931).

"Charles Kent, erstwhile 'doctor,' conducting the 'Scientific Health Institute,' at 822 North Broadway, Santa Ana, where he advertised the cure of many serious ailments, from heart trouble, pneumonia and St. Vitus' dance to milk leg, paralysis and insanity, operated under a diploma characterizing him as a 'Doctor of Eliminopathy' and used only massage and a common household treatment of the intestines, it was disclosed yesterday when he pleaded guilty to practicing without a license and received a suspended sentence of sixty days in the county jail. A condition of the suspension is that he pay $50 as a fine . . . " (Orange *News*, May 13, 1931). (Previous entry, June 1931.)

"Although he claimed he sold only Chinese herbal medicine, Lee Chong Wing, 142 East Washington Street, was convicted on charges of violating the Wright Act by Police Judge Johnson yesterday" (Stockton *Record*, May 27, 1931).

Chief White Eagle, charged in Long Beach with violation of the Medical Practice Act, pleaded guilty on March 2, 1931, and was sentenced to pay a fine of $100 or serve one hundred days in the city jail, sentence being suspended for two years on condition of no further violation of the Medical Practice Act.

T. Foo Yuen, San Bernardino Chinese herbalist, on February 21, 1931, is reported to have pleaded guilty to a violation of the Medical Practice Act and sentenced to pay a fine of $100, said sentence being suspended.